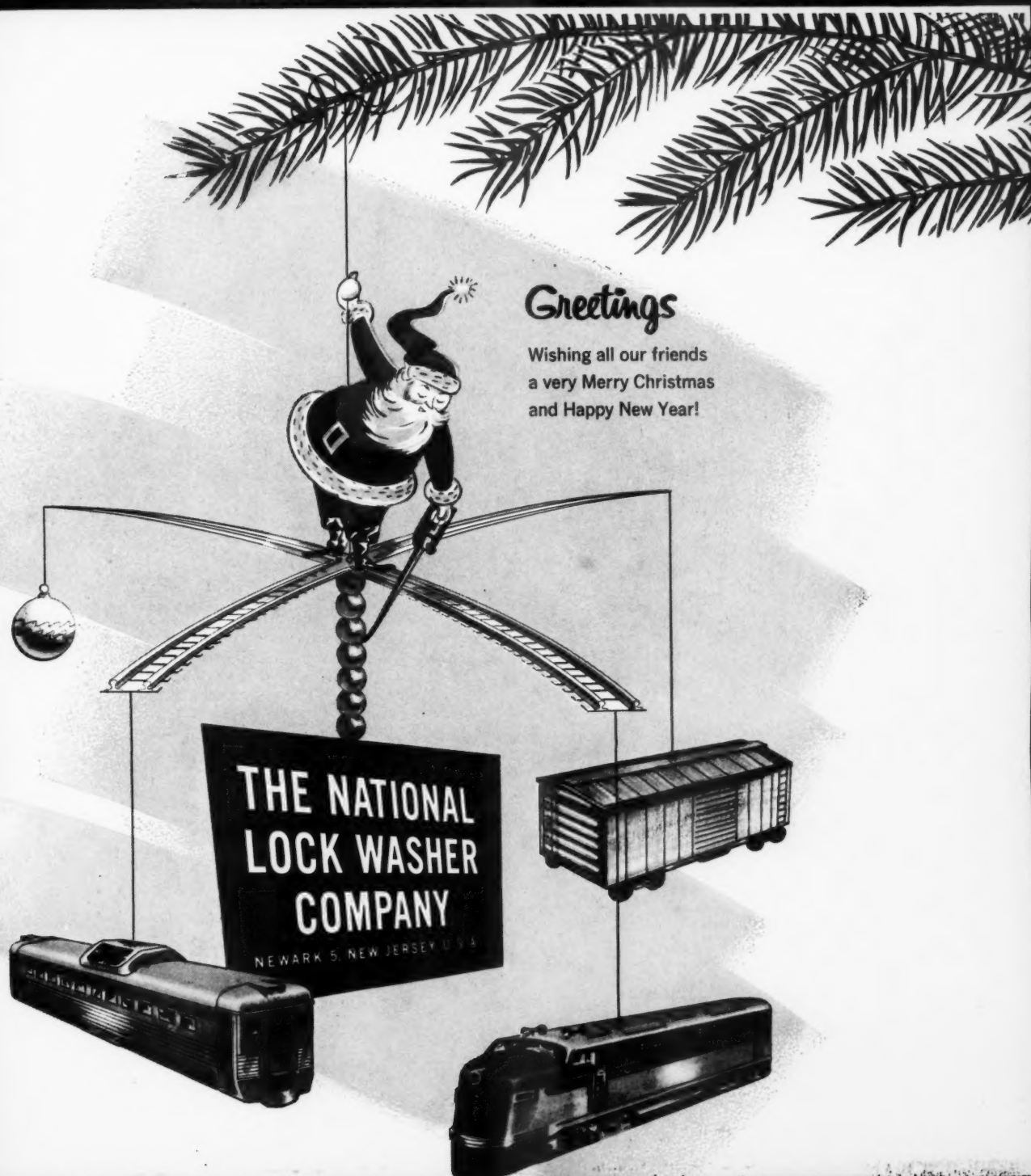


DECEMBER 1937

WAY

# TRACK *and* STRUCTURES

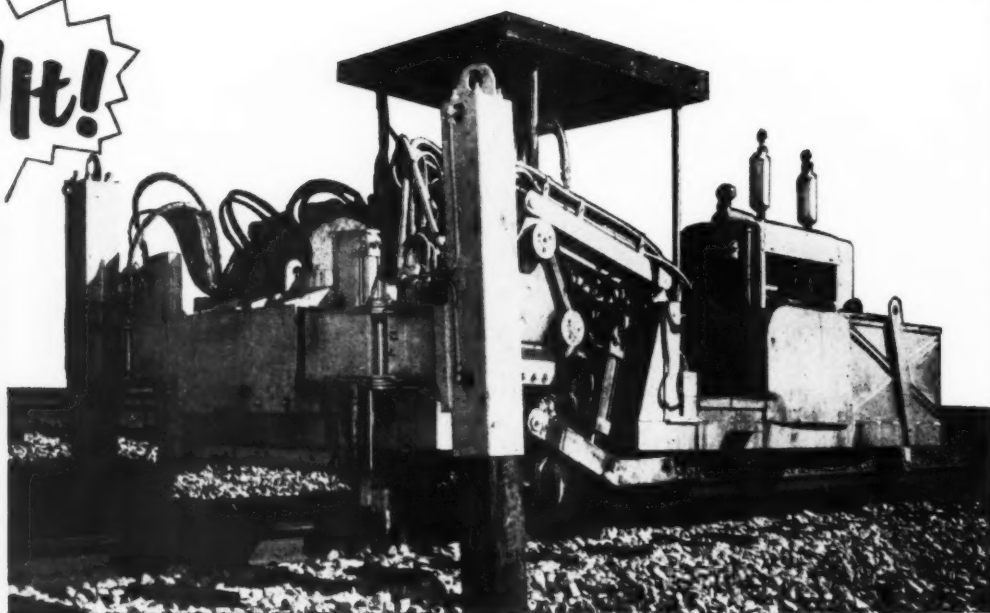
A Simmens-Broadman TIME-*SAVED* Publication



## Greetings

Wishing all our friends  
a very Merry Christmas  
and Happy New Year!

**Try It!**



## Maintain Surface on 75 to 150 Miles of Track a Year with the *Kershaw SPOT TAMPER*!

### ✓ CHECK THESE FEATURES:

- Tamps all classes of ballast including loose ballast, cemented ballast, dirt, cinders, chots, slag, gravel and crushed stone.
- May Be Used For Smoothing, Spot or Multiple Tamping
- Tamps Through Switches
- Tamping Bar Has Interchangeable Diamond Point Tamping Bits
- Tamping Bits Actually Go Under Tie
- Equipped With Hydraulic Jacks For Raising
- Completely Hydraulic Operated
- Equipped With Cross-Leveling Device

The Kershaw Spot Tamper combines the work load of a multiple tamper and a Jack-All to provide quick, efficient smoothing of low spots in track which has already been surfaced. This versatile machine, in addition to smoothing, also may be used as a spot tamper or a multiple tamper in your surfacing gang.

The Kershaw Spot Tamper is the only machine on the market which tamps through switches. It is equipped with hydraulic jacks for raising ahead of a multiple tamper and will effectively tamp and raise track from zero to eight inches.

Tamping bits on the Kershaw Spot Tamper actually go under the tie. The four tamping heads provide complete versatility of operation since they may be used all four together, in pairs or individually.

Try the Kershaw Spot Tamper on your railroad. It's ideal for surfacing in classification yards and terminals as well as for any smoothing, spot or multiple tamping operation.

For a free demonstration of the Kershaw Spot Tamper on your railroad, contact any Kershaw representative, or write:

**KERSHAW**  
MANUFACTURING CO. INC.

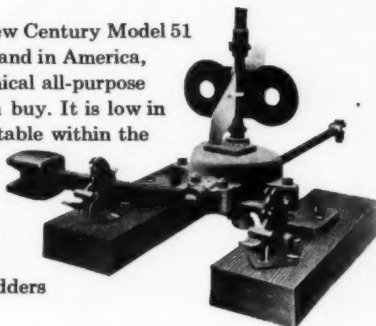
MONTGOMERY



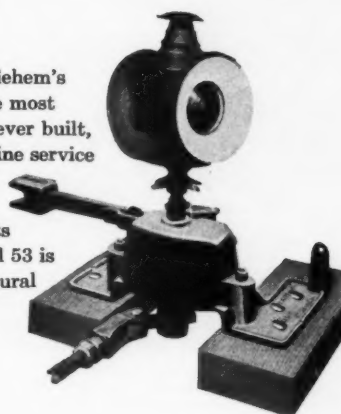
ALABAMA

# What do you look for in a stand?

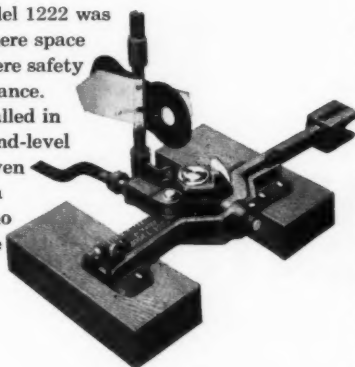
**ECONOMY?** The New Century Model 51 is the most popular stand in America, and the most economical all-purpose switch stand you can buy. It is low in first cost, fully adjustable within the stand itself, and permits use of the most economical switch fittings. Can be used anywhere: main or branch lines, yard ladders or sidings.



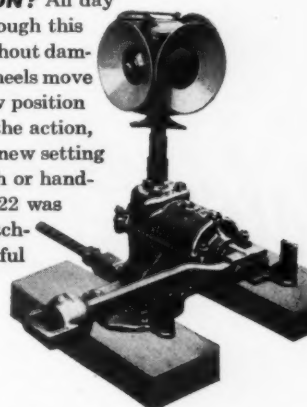
**RUGGEDNESS?** Bethlehem's Model 53 is one of the most rugged switch stands ever built, unsurpassed in main-line service where traffic is heavy and fast. From its tough broad base to its oversize spindle Model 53 is big and brawny, a natural for the shocks and strain of high-speed turnout duty.



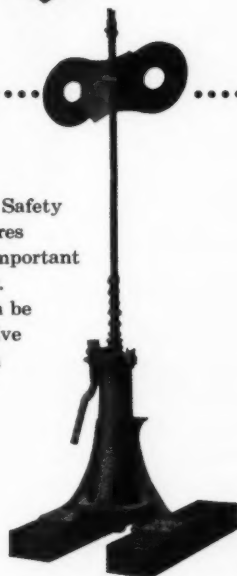
**COMPACTNESS?** Model 1222 was designed to be used where space is at a premium, or where safety calls for plenty of clearance. This stand can be installed in a flush-top box in ground-level station platforms, or even between the points of a switch where there is no clearance on either side of the track! Though small, it is strong, tough, and easy to operate.



**AUTOMATIC OPERATION?** All day long you can run cars through this tough little Model 22, without damage to car or stand. The wheels move the points toward the new position and the stand completes the action, holding the points in the new setting until the next run-through or hand-throw movement. Model 22 was expressly designed for switching service, and the powerful spring mechanism can really take it. Recommended for yards or sidings.



**SAFETY?** Bethlehem Main Line Safety Switch Stands have safety features not found in other models, most important of which is the waist-high throw. Any Main Line Safety stand can be made automatic, spring or positive by the simple changing of a cam in the mechanism. Can be used in any kind of track service.



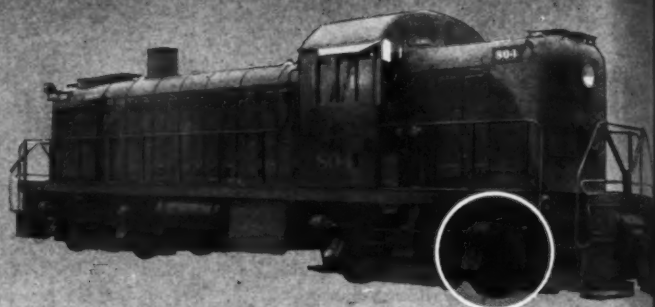
*From this group of stands you can select the right one for any location. A Bethlehem engineer will be glad to describe any of these stands for you in complete detail.*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.  
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

## BETHLEHEM STEEL



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EXTEND

LOCOMOTIVE WHEEL LIFE

30% TO 300%!

WITH

*Nalco*

TYPE  
TA

FLANGE  
LUBRICATOR

USING *Nalco* "MOLY" STICKS



Nalco "Moly" Stick is a highly-efficient dry lubricant that maintains a lubricating surface between locomotive wheel flanges and track under extremes of pressure and temperature . . . without *picking up dirt and sand to form a grinding compound*. In new Nalco Type TA Lubricators, "Moly" Sticks provide automatic flange lubrication that has extended wheel life from a substantial 30% to as much—particularly on

yard locomotives—as a whopping 300%!

Cost of Nalco Type TA Lubricators and "Moly" Sticks is small. Maintenance is limited to occasional stick replacements. Complete installation of lubricators on a diesel unit can be done by your shop personnel in four hours or less.

Call or write for details on the simplicity and continuing economy of Nalco Flange Lubrication for your locomotives.

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RAILWAY

# TRACK and STRUCTURES

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RAILWAY TRACK and STRUCTURES

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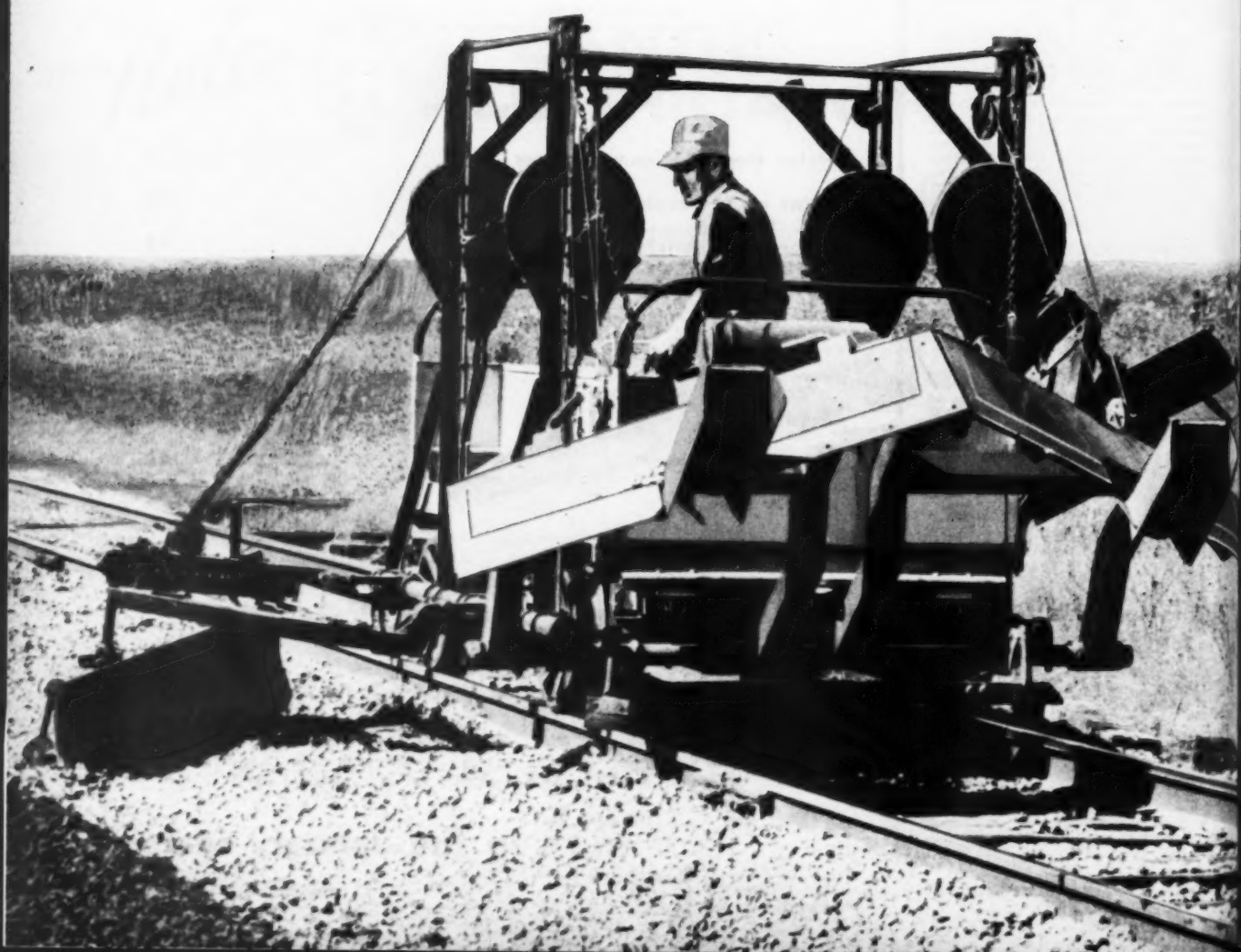
## DON'T MISS . . .

Light the "pots," get out the brooms, the shovels, the scoops and the plows—winter's here. But it's not as bad as it used to be.

Modern snow fighting methods have made winter's burden much easier to bear, as you'll realize when you read our story . . .

. . . in the January issue

*Ballast leveling is a one man job with ...*

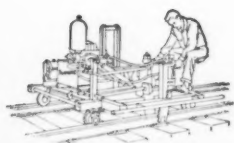


# Fairmont

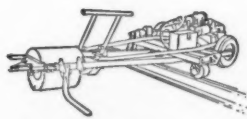
**THE FAIRMONT W92 SERIES B BALLAST BLADER AND SHAPER** (opposite page) is your quickest, least expensive method of spreading and distributing ballast during surfacing and track raising operations! One man and the W92 can plow new ballast from between the rails . . . distribute it evenly over the entire track section . . . or reverse the plow blades and move ballast from outside the rails into the center track area. Side wing blades can dress and form the shoulder or pull shoulder ballast onto the tie ends for tamping. All this and a maximum of ballast leveling in a day's time. Modernize and mechanize your maintenance crews with the Fairmont Ballast Blader and Shaper.

## Rail Renewal

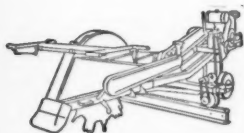
## Equipment by Fairmont



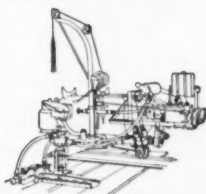
**W85 SERIES B HYDRAULIC SPIKE PULLER**, especially for rail gang use, is self-propelled forward and reverse. Pulls from both sides of rail at the same time. One-man operation. Removes 40 to 50 spikes per minute.



**W88 SERIES B TIE BRUSH** cleans tie area under and adjacent to the tie plate. Hydraulically propelled, it is ideal for gang use ahead of adzers and for cleaning before applying plastic base to tie plates.



**W89 SERIES A CRIB REDUCER** prevents ballast from fouling the teeth of adzers. Digging drive includes fluid coupling, multiple V belts and speed reducer. Adjustable counterbalance and 2-way drive. 1-man operation.



**W94 SERIES A TIE COATER** applies plastic type materials to newly adzed tie surfaces when relaying rail. It is self-propelled, reversible, operated by one man and fully equipped for efficient operation.

Also available are the **W71 SERIES A TIE SPRAYER**, an automatic sprayer requiring one-man operation; the **W84 Series B Hydraulic Spike Puller**, especially built for rapid spike removal; and the **W79 Series A Spike Setter Carriage**, a simple unit that makes spike setting easy and faster.

## FAIRMONT

## RAILWAY MOTORS, INCORPORATED FAIRMONT, MINNESOTA

MANUFACTURERS OF BALLAST MAINTENANCE CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, TIE RENEWAL EQUIPMENT, RAIL RENEWAL EQUIPMENT, WEED CONTROL EQUIPMENT, HY-RAIL CARS, TRACK MOTOR CARS, PUSH CARS AND TRAILERS.

## Helps from Manufacturers

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

**BACKHOES.** A two-color, 16-page catalog that features the design and performance characteristics of the new Model D4 Hydraulic Backhoe is now available. The purpose of the catalog is to cover systematically and in detail the design and engineering features of the backhoe. Complete specifications and on-the-job illustrations are incorporated. (Write: *Hyster Company, Dept. RTS, 2902 NE Clackamas Street, Portland 8, Ore.*)

**AIR COMPRESSORS.** An 8-page, 2-color bulletin, designated P-106B, has been made available describing the new LeRoi 600 rotary air compressor. Thirty-eight photographs are used to illustrate the compressor and close-up views of 33 features are shown, as well as several overall views of the new compressor. General specifications are also listed. Several pages are devoted to design and to the "unit construction" of the compressor. (Write: *LeRoi Division, Westinghouse Air Brake Company, Dept. RTS, Milwaukee 1, Wis.*)

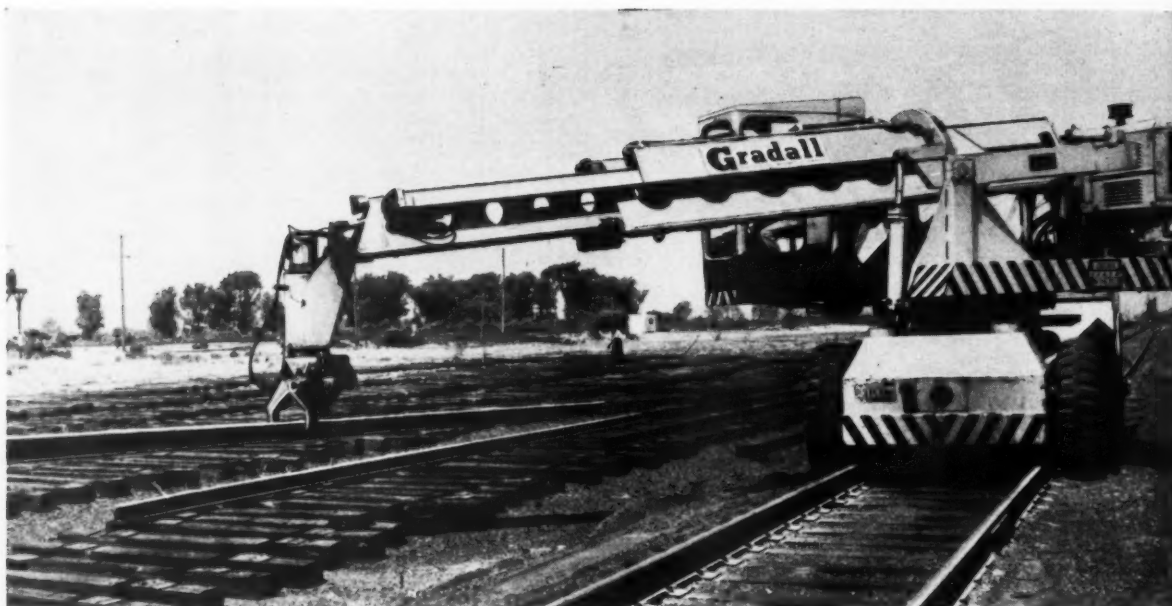
**DIESEL ENGINES.** A new booklet entitled, "The Switch to Higher Profit," has recently been released by the manufacturer. A multi-page brochure in two colors, it illustrates the many uses of the manufacturer's diesel engines in the railroad industry. The booklet explains how these power units can be fitted to many operations: crane power, air conditioning, locomotive prime power, and many others. In addition, it explains the parts service available on Cat diesel engines. The booklet is designated Form No. D762. (Write: *Caterpillar Tractor Company, Dept. RTS, Peoria, Ill.*)

**WELDING ELECTRODES.** A new 70-page electrode booklet guide has been made available containing information essential to anyone concerned with buying or using electrodes. Among the features of the booklet is an electrode consumption calculator, in tabular form, which provides data for calculating consumption per linear foot in the welding of various types of joints. The guide describes each Airco electrode, its color code, its application, and the best procedure for its use in welding. Designated Form ADC 650G, the booklet also discusses weld-metal chemical analyses and mechanical properties. (Write: *Air Reduction Sales Company, Dept. RTS, 150 E. 42nd Street, New York 17.*)

**CASTING FORMS.** Bulletin No. 300, on Form-Crete casting forms for prestressed and precast concrete, has recently been made available by the manufacturer. The catalog contains complete specifications on and illustrations of the various type forms available. Extensive revisions have been made in the bulletin to show the many new types of casting forms now available. (Write: *Food Machinery & Chemical Corporation, Dept. RTS, Lakeland, Fla.*)

**CRANES.** A new four-page bulletin has recently been made available describing the manufacturer's 7-ton rated, self-propelled Model CR-35 Bantam crane-excavator. The two-color bulletin, designated No. CR-502, contains detailed information concerning specifications, features, operating data and capacities of the  $\frac{3}{4}$ -cu yd machine. One page of the bulletin is devoted to machine specifications and capacity ratings. Large, easy-to-read charts are utilized to show lifting capacities and digging ranges for the machine when it is used as a crane, shovel and backhoe. (Write: *Schield Bantam Company, Dept. RTS, Waverly, Iowa.*)

**TAMPERS, TIE SPACERS.** The McWilliams spot tamper and the RMC tie spacer are the subjects of two new bulletins recently made available. Printed in two colors, the booklets make extensive use of on-the-job photographs and list complete specifications and operating data for the two machines. (Write: *Railway Maintenance Corporation, Dept. RTS, Box 1888, Pittsburgh 30, Pa.*)



## E.J. & E. RAILWAY CUTS M/W COSTS WITH Gradall

Elgin, Joliet & Eastern Railway's multi-purpose Gradall, equipped with Self-Compensating Guide Wheels, in only 5 months' operation has racked up impressive records on rail laying, gondola unloading and many other time-consuming maintenance-of-way projects.

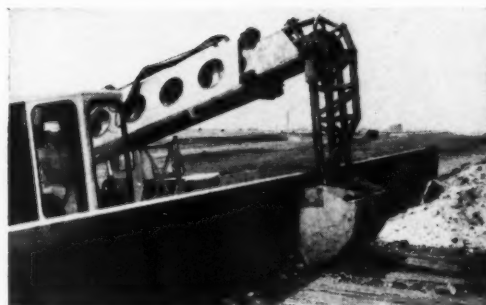
On rail-laying jobs—whether for new construction, replacement or relocation of track—their Gradall's positive hydraulic control easily positions standard 39-foot lengths at the rate of one per minute, even on curves. Since the rail tongs are rigidly attached to the boom, no tag lines are required—no helper is needed to guide rails into proper position.

Removing open-hearth slag from 10 gondola cars formerly required a crane and a crew all day long. Now, with Gradall on the job, up to 28 cars are unloaded each day—and the reduced clean-up required frees the crew earlier for other work.

Before investing in any M/W equipment, investigate how a multi-purpose Gradall can speed up operations. Write Gradall Division, The Warner & Swasey Company, Cleveland 3, Ohio, to arrange for a field demonstration on your own jobs. Of course—no obligation.

*Distributors in over 75 principal cities  
in the United States and Canada*

**Complete maintenance-of-way with one machine...a GRADALL**



*Elgin, Joliet & Eastern Railway's Gradall—equipped with a goose-neck unloading extension and 5-ft. wide bucket—quickly and economically unloads slag, sand, gravel and other materials used in M/W operations.*

During the first five months Elgin, Joliet & Eastern Railway had their Gradall, it was used for this wide variety of M/W applications:

- Unloading all open-hearth furnace waste material from gondola cars at Gary Works
- Laying rail
- Ditch cleaning along right-of-way and in yards
- Laying pipe on culvert installation
- Trenching for culvert and pipe installations
- Backfilling
- Loading trucks with sub-grade fill
- Distributing ballast
- Relocating drainage ditches

**Gradall®**  
DIVISION OF WARNER & SWASEY  
© Reg. U.S. Pat. Off.  
Cleveland  
PRECISION MACHINERY SINCE 1898





#### *Proof of the Seal*

This Bird Self-Sealing Tie Pad is removed for inspection after 5 years of service. Because of its tenacious seal, the pad had to be pried from the tie with an adze. Bird Self-Sealing Tie Pads maintain dimensional stability . . . cannot stretch or compress . . . provide a constant unbroken seal.

#### *Proof of the Protection*

Unretouched photograph of cross section of tie shows underplate area, including spike holes, after 10 years' protection by Bird Self-Sealing Tie Pad. There is no trace of the destructive effects of moisture and abrasion in these vulnerable areas. Moisture and abrasive materials could not penetrate the seal.



## **Effective Tie Pad Performance Depends on the Seal...**

### **and you get Proof of the Seal with BIRD Self-Sealing Tie Pads**

The performance of tie pads depends on the permanent and effective seal between the pad and the tie. Any tie pad that is not securely sealed to the tie simply provides a shelter for accumulated moisture and abra-

sive materials. These destructive agents cause the breakdown of the supporting power of the tie under the plate and the holding power of the spike wood.

Bird Self-Sealing Tie Pads are the *only* tie pads whose durable and effective seal with the tie has been proved through years of in-track service. Actual in-track installation also proves that Bird Self-Sealing Tie Pads increase tie life sufficiently to pay the cost of tie pads many times over. These savings represent a substantial reduction in track maintenance costs.

In your '58 budget plans, be sure to allow for Bird Self-Sealing Tie Pads. For an interesting booklet giving facts and figures on dollar savings, write to Bird Tie Pads, East Walpole, Massachusetts, Department HTS.

### *Bird Self-Sealing Tie Pads Are Recommended For:*

Bridge Decks • Curves • Switch Timbers  
Highway Grade Crossings and Other  
Paved Areas • Crossing Frogs  
Insulated Joints • With Smaller Tie Plates  
Pile Cutoffs • Through Station Platforms  
Out-of-Face Installations in Rail-Laying  
Programs • Sandy Locations  
All other locations where tie life is  
short or replacement costs are high.

*Buy the Best...*



*Buy BIRD*

# EXPERIENCE—THE GREAT TEACHER

75 YEARS IN VEGETATION CONTROL WORK . . .



... A good reason why so many railroads each year entrust their vegetation control program to the pioneer company.



**READE MANUFACTURING COMPANY, INC.**

JERSEY CITY 2, N. J.

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Hydraulic lines up to 25 feet in length on this Gradall were made up from coils of Aeroquip Bulk Hose and Reusable Fittings.

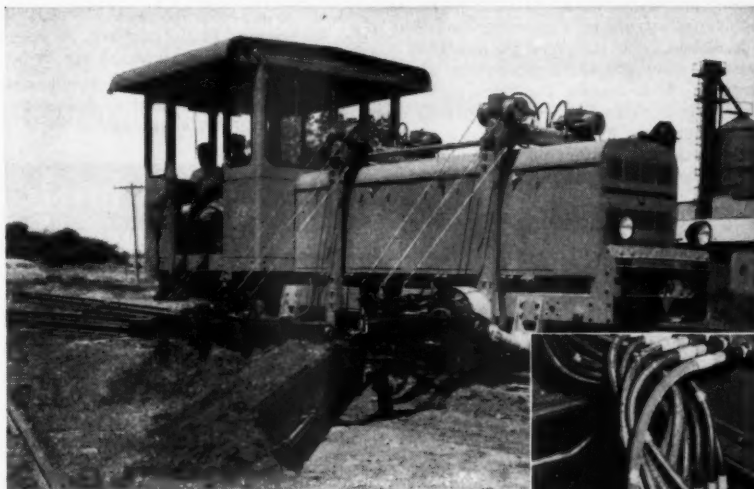
## Cut Costs, Simplify Inventory, Reduce Downtime

**Replace Hydraulic Lines Quickly—In the Shop, On the Job,  
with Aeroquip Bulk Hose and Reusable Fittings**

**20% to 60% of the cost** of any hose line is in the fittings! You save that much with Aeroquip Hose Lines because the fittings can be used again and again on replacement lines.

**A minimum inventory** of Aeroquip Bulk Hose and Fittings meets all requirements. Hose lines of any length can be made in minutes, as needed, using hand tools. Extensive stocks of pre-assembled hose lines are unnecessary.

**Fast, on-the-spot replacements** made possible with Aeroquip Hose and Fittings cut expensive downtime, get equipment back on the job with no delay. Learn why more and more railroads are using Aeroquip products. Write for complete information.



On this ballast maintenance car, Aeroquip Flexible Hose Lines provide dependable service for hydraulic lines and for engine fuel and lube oil lines, withstand vibration and shock.

# Aeroquip

REG. TRADEMARK

**AEROQUIP CORPORATION, JACKSON, MICHIGAN**

INDUSTRIAL DIVISION, VAN WERT, OHIO • WESTERN DIVISION, BURBANK, CALIFORNIA

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**CANADIAN NATIONAL**—Harrison B. Titus, division engineer at Halifax, N. S., retired recently. W. B. Jackson, former district engineer of the Southern Ontario district, has been appointed general superintendent at North Bay, Ont., and F. B. Kennedy, assistant division engineer, has been promoted to assistant to the manager and general superintendent of the Newfoundland district.

**CANADIAN PACIFIC**—J. H. Morrish, has been named assistant division engineer at Montreal, succeeding J. B. Wheelwright, who has been transferred.

**CHESAPEAKE & OHIO**—R. H. Abbott, division engineer at Richmond, Va., has been promoted to assistant superintendent at Clifton Forge, Va.

**ILLINOIS TERMINAL**—James A. Parker has been appointed general engineer with headquarters at St. Louis, Mo.

**NEW YORK CENTRAL**—R. R. Manion, assistant vice-president — engineering at New York, has been appointed to the newly created post of assistant vice-president—operations. Beverly S. Converse, director of engineering, succeeds Mr. Manion as vice-president—engineering. Eugene R. Bernardi, assistant chief engineer, succeeds Mr. Converse. John L. Beckel, bridge engineer, has been named engineer of structures, succeeding George E. Robinson, who has been promoted to assistant chief engineer, succeeding Mr. Bernardi. T. E. Jordan, has been named district methods engineer at Indianapolis, Ind., succeeding R. F. Lawson, who has been appointed assistant district engineer at Cleveland, Ohio, succeeding C. C. Herrick.



R. R. Manion  
NYC



B. S. Converse  
NYC



E. R. Bernardi  
NYC



J. L. Beckel  
NYC

**NORFOLK & WESTERN**—Edgar A. Stump, transitman at Portsmouth, Ohio, has been promoted to resident engineer at that location, succeeding Roscoe Porter, who has retired after more than 45 years of service.

**PENNSYLVANIA** — J. W. Diffenderfer, former assistant division engineer at Philadelphia, has been named project manager in the research and development department at that location.

**SPOKANE, PORTLAND & SEATTLE** — Harland F. Moy, assistant chief engineer, at Portland, Ore., has been promoted to secretary and chief engineer at that location, succeeding Carl F. Thomas, who has retired after 43 years of service. G. E. LaSalle, Jr., assistant engineer of structures, at Portland, has been promoted to principal assistant engineer and is succeeded by Donald D. Thomas, resident engineer, Celilo Bridge, The Dalles, Ore.

## Obituary

C. G. Grove, who retired on July 1, 1957, as area engineer of the Pennsylvania at Chicago, died on November 18 of a heart attack. Mr. Grove, who was 67 years old, was a past president of the American Railway Engineering Association.

J. C. DeJarnette, Jr., chief engineer of the Richmond, Fredericksburg & Potomac died November 10 at the age of 60.

F. W. Leeber, retired division engineer on the Canadian National at Saskatoon, Sask., died recently at the age of 69.

## Biographical briefs

Thomas M. Pittman, 70, who recently retired as division engineer on the Illinois Central at Memphis, Tenn. (RT&S, Oct., p. 26), graduated from the University of Illinois, and joined the Illinois Central in August 1905 as an engineering apprentice at Louisville, Ky. He served, subsequently, as a rodman at Chicago, instrumentman at Memphis and rodman at Fulton, Ky., until June 1912 when he was named instrumentman at Fulton. In October 1915 he was promoted to assistant

engineer at Chicago and in March of 1919 was transferred in that capacity to Macomb, Miss. In June 1921 he was promoted to division engineer at Water Valley, Miss., subsequently serving in that capacity at Waterloo, Iowa, and—at the time of his recent retirement—at Memphis.

Henry F. Davenport, 31, who was recently promoted to division engineer on the Illinois Central at Memphis, Tenn. (RT&S, Oct., p. 26), graduated from the University of Michigan and joined the IC in 1946 as a junior engineering aide at Paducah, Ky. After serving in that capacity at Champaign, Ill., he was promoted to assistant supervisor on the Kentucky division in November 1948. From July 1950 until March 1955, he served as supervisor of track at Mendenhall, Miss., Tutwiler and Corinth. On the latter date he was promoted to assistant to division engineer at Memphis—the position he held at the time of his recent promotion.

Paul H. Croft, Jr., 30, who was recently promoted to assistant to division engineer on the Illinois Central at Memphis, Tenn. (RT&S, Oct., p. 26), graduated from the University of Illinois and joined the IC in 1943 as an engineering apprentice on the Chicago Terminal division. He served, subsequently, as chairman and rodman and in 1951 was appointed junior engineering aide at Memphis. In 1952 he was promoted to assistant supervisor of track at Carbondale, Ill., and the following year was promoted to supervisor of track at Tutwiler, Miss. In 1956 he was transferred to Jackson, Miss.—the position he held at the time of his recent promotion.

Ronald M. Bailey, 33, who was recently promoted to district engineer on the Canadian National at Saskatoon, Sask. (RT&S, Oct., p. 26), graduated from the University of Saskatchewan and joined the CNR in 1946 as a chainman at Winnipeg, Man. He subsequently served as draftsman, assistant engineer, and division engineer, at Port Arthur, Ont., until 1955 when he was named assistant district engineer at Vancouver, B. C. In 1956, he was named assistant engineer maintenance of way—

(Continued on page 74)



Harland F. Moy  
SP&S



Thomas M. Pittman  
IC



Henry F. Davenport  
IC



Paul H. Croft, Jr.  
IC





## Your old-fashioned scalping cuts more profits than weeds!



Clearing weeds by shovel-cutting, with today's high cost of labor, is downright extravagant! Borate weed killers can do a much better job of weed control for a small fraction of what hand-scalping is now costing you.

Countless dollars have been saved on weed control by roads using our borate weed killers since we first pioneered their development. They are effective against weeds and grasses for long periods... easy to apply... and safe to use wherever vegetation is unwanted. Today we offer a choice of several proven herbicidal formulations—each with special characteristics and advantages—to meet *your* particular requirements.

Start *your* labor-saving weed control program now. Talk to one of our technically-trained salesmen. He will be glad to recommend and demonstrate the right weed killer for you. Write today for literature or to arrange a meeting.

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PACIFIC COAST BORAX COMPANY DIVISION

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***the NEW***



## ***Here is the world's highest tamping efficiency***

In dollars per foot of perfectly tamped track, the *Matisa Speedtamber* will give your M/W budget a real assist. This machine retains the unbeatable Matisa principle of vibration-compaction tamping with the machine load always on tamped track, but now has many **PLUS** features:

Now hydraulically positioned tamping units for positive action, faster production. The most efficient use of hydraulics has been applied throughout the machine.

Now V-belt drives with multiple disc clutches — added safety, cuts maintenance, eliminates gears and noise.

Now instantaneous split-head operation switches from speed surfacing to deep tamping without interruption.

Now pneumatic control valves with assured separate air supply from a small compressor on the diesel engine.

For details, write for the New *Matisa Speedtamber* brochure.

**Lease and optional purchase plans available**

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1020 Washington Avenue • Chicago Heights, Illinois

## News notes...

RAILWAY

### TRACK and STRUCTURES

... a résumé of current events throughout the railroad world

The Chicago & North Western has made a dramatic bid to eliminate "unused, unneeded and unproductive" station services. It began its drive with a petition to the South Dakota Public Utilities Commission asking authority to withdraw the agent and remove the depot from 69 one-man locations and 30 days thereafter to determine the feasibility of installing a "central agency or area headquarters" setup. The road estimates that the net savings under the central agency proposal will be in excess of \$250,000 annually.

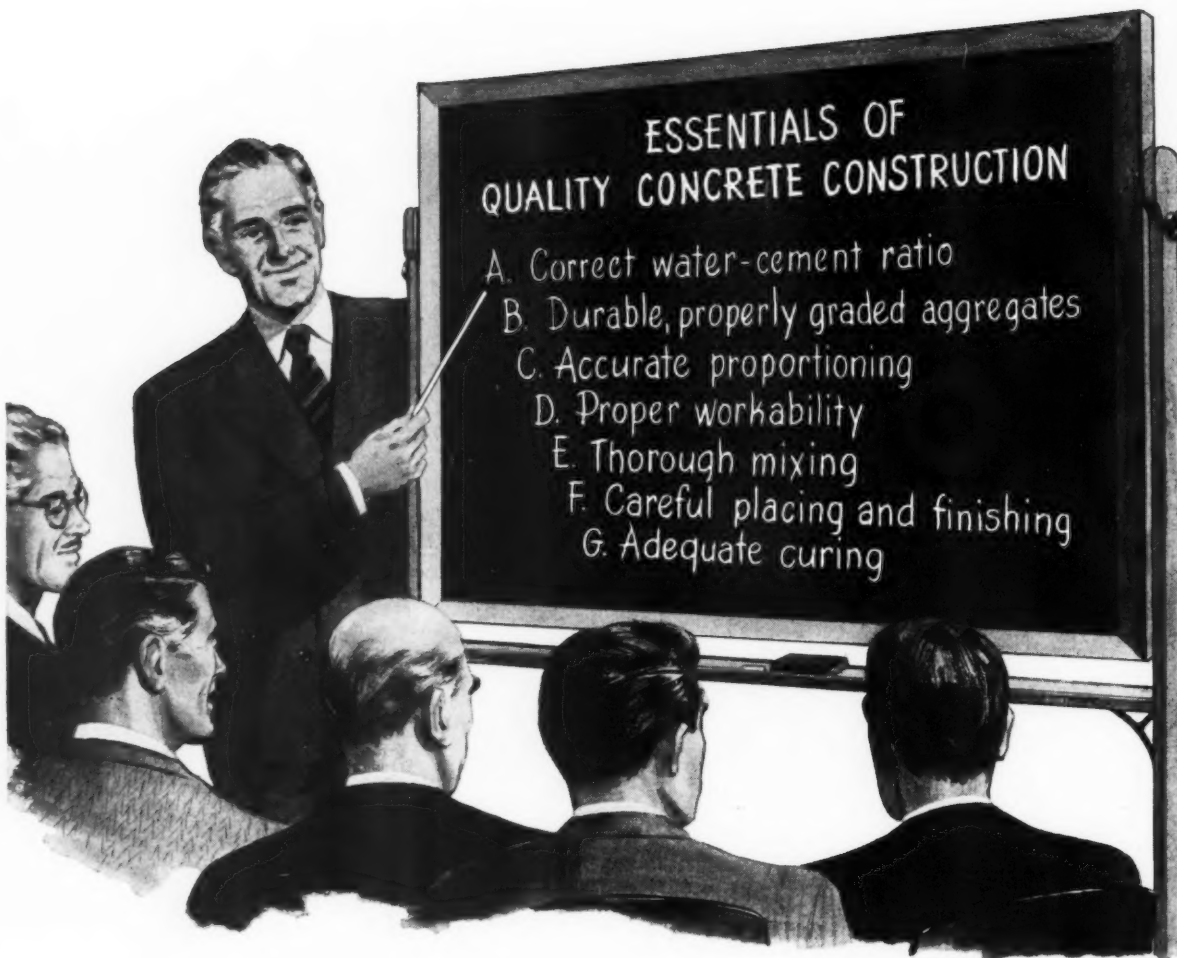
Fast freights for mail are proposed by the Post Office department as a means whereby railroads could retain mail traffic between points where passenger service is being curtailed or abandoned. The idea is that some merchandise trains might be speeded up to the point where mail-service requirements would be met, and that new fast mail-lcl trains might be established. The proposal is now being discussed with at least two railroads.

Employer contributions under the Railroad Unemployment Insurance Act will rise to 2 1/2 per cent for 1958, 1/2 per cent higher than the 1957 rate. The Railroad Retirement Board announced the increase based on a balance of approximately \$289 million in the fund on September 30. A balance of \$300 million to \$350 million would have been required to maintain the rate at 2 per cent.

Wage boosts totaling 12 cents an hour, effective November 1, are behind a railroad move to file applications for freight rate increases totaling \$400 million a year. Mindful, however, of the competitive situation, the railroads will not ask for across-the-board increases but will seek to raise rates on a carefully screened list of commodities selected so as to minimize the possibility of losing traffic to competitors.

It is estimated by the Labor and Commerce departments jointly that the value of all types of construction put in place by the railroads in the first 10 months of 1957 was approximately \$378 million compared with \$348 million in the same period last year, an increase of 9 per cent. The value of railroad construction in October was estimated at \$42 million compared with \$41 million both in September 1957 and October 1956, an increase of two per cent.

Tailored appliance rules for track motor cars will be the proposed answer of the Interstate Commerce Commission to the United States Supreme Courts' ruling that a track motor car and push truck coupled together are vehicles covered by the Safety Appliance Acts. The court's ruling grew out of a case involving an accident on the Baltimore & Ohio. The Commission's proposal, which will be submitted to Congress as a legislative recommendation of its next annual report, will suggest that the Appliance Acts be amended to exempt four-wheel track motor cars, and four-wheel push trucks and to authorize the Commission to prescribe for those cars and trucks such appliances and devices as may be necessary in the interest of safety.



## Helping railroad men solve their concrete construction problems

In order to help railroad engineering and construction staffs use cement and concrete in the most efficient and economical manner, the Portland Cement Association conducts its well-known "Quality Concrete Schools." These schools are designed to keep railroad personnel abreast of the many advances in construction practices as well as to review the basic principles of making quality concrete. Since the first course in 1951, a total of 75 schools have been conducted for 2,500 railroad men employed by 39 major railroads.

The PCA Schools are offered to railroad engineering and construction staffs without cost or obligation. The schools can be held at the time

and place most convenient for the railroad personnel involved. The training will help all railroad men understand the characteristics of plastic and hardened concrete, the proper aggregates to use, the designing of suitable mixes and the best construction details and field practices to be employed for all types of concrete railroad construction. The courses have proved to be of great value as refresher sessions for older employees and training sessions for new personnel.

Schedules for 1958 PCA Quality Concrete Schools are now being prepared. For additional information on this helpful service, write at once to the Structural Bureau of the

## PORTLAND CEMENT ASSOCIATION

33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work





Rail-end buildup

## FABRICATION MAINTENANCE REPAIR...

*Linde* serves the  
TRADE-MARK  
nation's railroads

Through the years, LINDE Representatives and railroad men have worked together as a team to improve methods of road maintenance, equipment repair, and shop fabrication. And this teamwork has paid off. For today—in yards, shops, and along the right of way—LINDE's modern metalworking processes are helping railroads maintain efficiency and modernize for the future . . . at minimum cost.

Whatever your fabrication, repair, or maintenance needs may be, LINDE's unmatched engineering facilities and dependable apparatus will meet them exactly. Get complete details on modern electric welding, oxy-acetylene welding and cutting, flame-hardening, and continuous rail welding. Call your nearby LINDE Representative today!



Oxy-acetylene cutting



HELIARC welding



RAILROAD DEPARTMENT

### LINDE COMPANY

In Canada: LINDE COMPANY, Division of  
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DIVISION OF



CORPORATION

30 East 42nd Street, New York 17, N. Y.

"Heliarc," "Linde," "Oxweld," and "Union Carbide" are trade-marks of Union Carbide Corporation.



# JACKSON TRACK MAINTAINER GETS TOP PRIORITY

on the 1958 equipment recommendation lists of the vast majority of roads using power tampers. The reason is simple: Judged from any angle, versatility, economy, efficiency or dependability the JACKSON MAINTAINER is decidedly superior. It gives you maximum consolidation under each tie and right under the rail, the vital load-bearing zone . . . in all kinds and conditions of ballast materials . . . in all lifts of track, in all production tamping . . . faster and better spot tamping than can be done by any other means. Let us give you the facts which so plainly indicate why most roads are using JACKSON MAINTAINERS, and lots of them. Why not phone, right now!

**JACKSON VIBRATORS, INC.**  
LUDINGTON, MICHIGAN

## Dear reader:

### If you were president?

A young maintenance-of-way officer came into the office the other day bearing a gloomy attitude. He was extremely dissatisfied with recent management decisions affecting the operations of his department. It seems that, because of a decline in the company's business, the management had put into effect some cutbacks in M/W work. Our young M/W officer was unhappy because he felt that the top officers responsible for the decisions did not have a sympathetic understanding of M/W problems.

Practically all of us have, at one time or another, experienced this feeling of dissatisfaction with the decisions or attitudes of the people who run the companies we work for. It is only natural that we should have these feelings. Management decisions are sometimes such as to cause hardships, disappointments and frustrations among the people affected by them. And sometimes it does seem that management makes mistakes or at least adopts the wrong approach in making its wishes known.

On the other hand, we can't forget that management has its problems too. These arise largely from its basic obligation, which is to operate the property so as to produce a reasonable profit for the owners (the stockholders). To see what management is up against in carrying out its responsibilities we might try putting ourselves in the position of the small group of men at the top who have to make the decisions.

So here we are, sitting in the president's chair. In our efforts to operate the business at a profit we have run into serious snags. For a long time costs have been going up. To keep in the black we have to do one or both of two things—operate the property more efficiently and/or increase the price we charge for our product. Through mechanization, modernization and reorganization we have accomplished wonders in promoting efficiency, and we have been able to increase our prices somewhat but here we are hampered because we are a regulated industry and our pleas for rate increases are dealt with leisurely and inadequately by a regulatory body.

All the while we are haunted by growing competition by other transport agencies that have the benefit of direct or indirect subsidies from the government. In our efforts to reduce costs we are thwarted by union agreements or other rules that in many cases require us to pay wages for work not done or for work that is not necessary. And when we try to eliminate costly or unprofitable services we are frequently stymied by government agencies.

When we thus see the overall problem from the perspective of the president's office the troubles of individual supervisors, which loomed so large before, seem to shrink in importance. We see also that the decisions of management are motivated by necessity and not by personal whims, although they are subject to human fallibility.

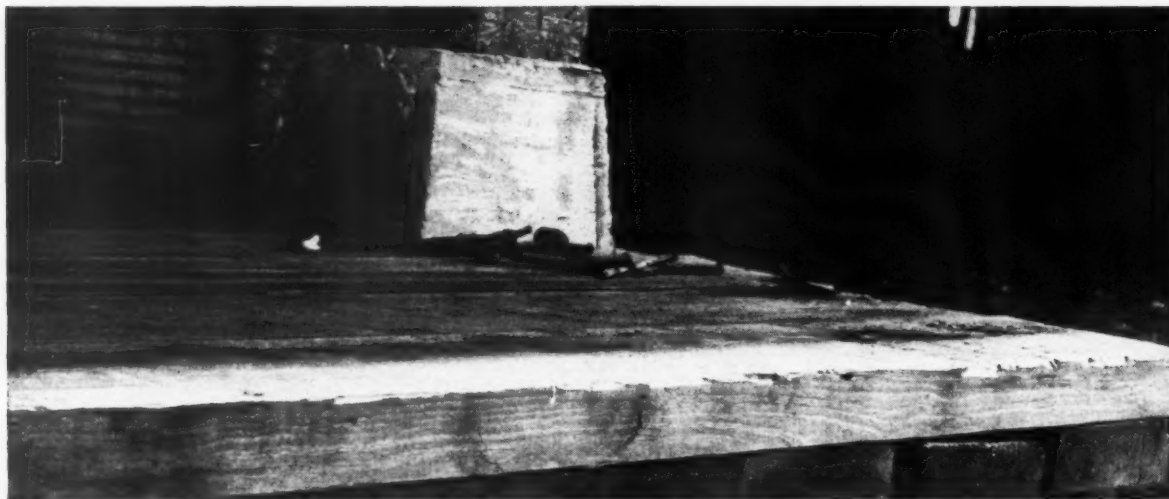
Finally we perceive that, in meeting the problems imposed by its basic obligation, management needs the support and cooperation of the supervisory staff; if it fails there is hardly anyone on the railroad who won't find the consequence more difficult to bear than the measures taken to prevent failure. MHD

## On the Kansas City Southern:



Only wood, with its natural resiliency, holds up under repeated heavy impact.

## Penta protects this lumber shed



## against rot and termite attack

Rot and termites strike quickly in the warm, moisture-laden atmosphere of Port Arthur, Texas. Ordinarily, they'd make fast work of the Kansas City Southern Railway lumber shed located there.

But the Penta-treated wood used in much of the shed's flooring and many of its supporting members means it will stay strong, solid and resilient for many years to come, despite any number of termites or rot organisms nearby. Penta-treated wood is selected for such installations because of its immediate availability, low initial installation cost, and reduced cost of annual upkeep.

**Saves Money!** Penta-treated wood

will save you money wherever decay or insects threaten, just as it has the Kansas City Southern. Its service life is 4 to 5 times *longer* than untreated wood. You spend less for replacements, less for maintenance.

**Stays in wood.** Penta is an oil-borne (not water-soluble) preservative. It doesn't leach out to leave wood vulnerable to attack.

**Faster, easier handling.** No squawks from workmen about difficult or dirty handling. Because Penta-treated wood is clean, it speeds work, raises morale.

Adding all these things up... doesn't Penta sound like it's best for you? For a

list of treating plants near you, write to...

Organic Chemicals Division  
MONSANTO CHEMICAL  
COMPANY

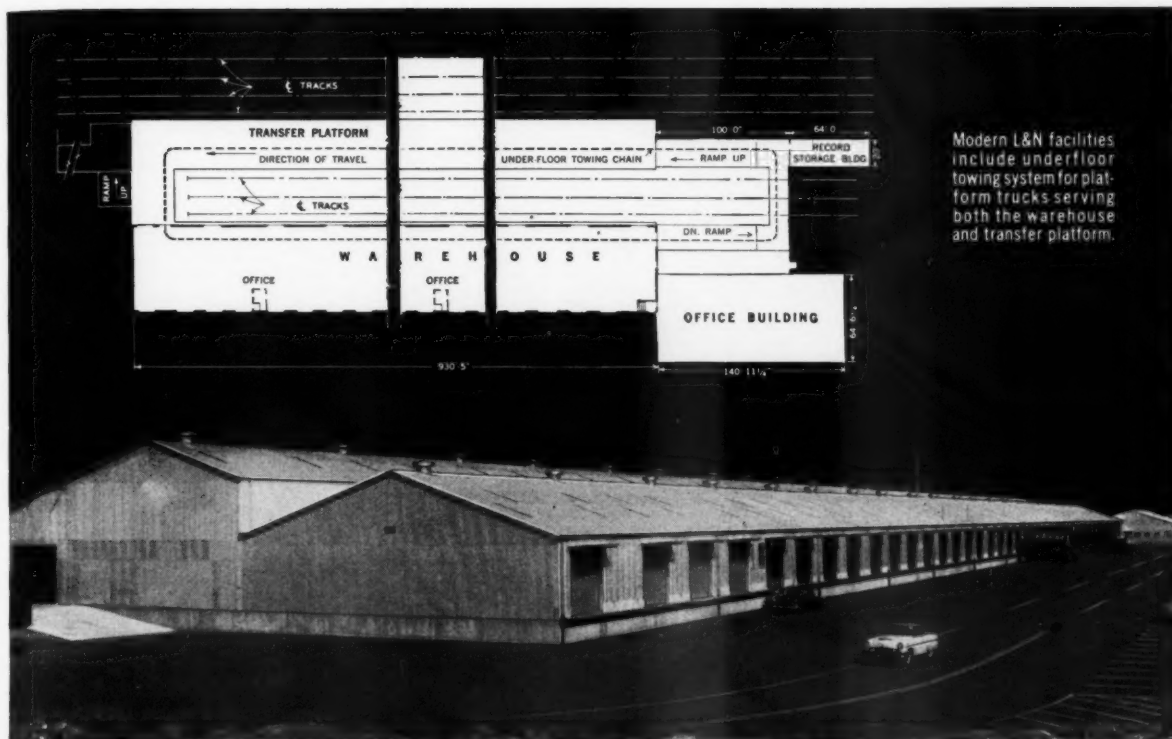
Dept. PI-20A, St. Louis 1, Missouri



Where Creative Chemistry Works Wonders For You

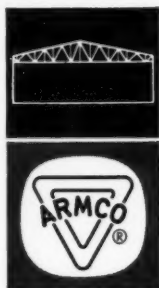
RAILWAY TRACK and STRUCTURES





Modern L&N facilities include underfloor towing system for platform trucks serving both the warehouse and transfer platform.

Overall size of attractive L&N freight house is 138' x 1,030'. Armco ALUMINIZED STEEL® covering material (a special hot-dip aluminum coated steel) requires no expensive painting or other finishing.



## Truss-Type Armco Steel Buildings Meet Big Building Needs for L & N

Radnor Yard, near Nashville, Tennessee, is the site of one of the largest factory-made buildings for railroad use . . . a truss-type Armco Steel Building. The multiple-span structure serves as modern freight house facilities for the Louisville & Nashville.

Truss-type Armco Buildings provide an efficient yet low-cost way to solve big building problems. With clear span widths up to 100' and practically unlimited lengths, you can select the exact size you need . . . and easily fit it to your specific requirements. The post-free interior gives complete freedom of floor plan layout.

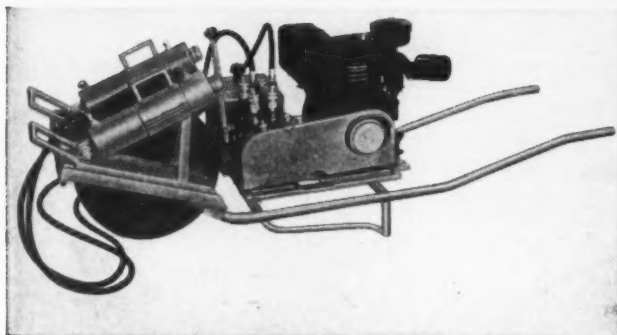
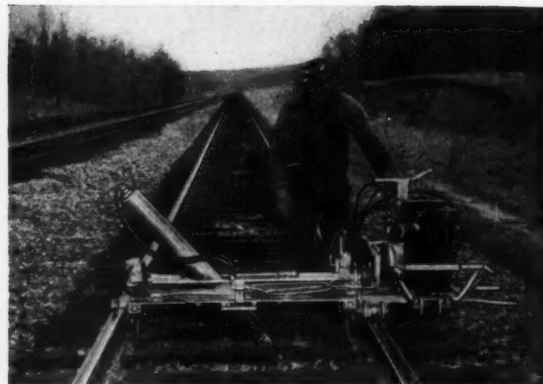
What about costs? You get all the economies of a mass-produced building. All parts are prefabricated to eliminate waste. Also, your savings continue year after year with low maintenance costs.

For more information on the complete line of Armco Steel Buildings for railroad use, write us for Folder 11856. Armco Drainage & Metal Products, Inc., 3467 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corp.



For more information or prices,  
Call Western Union and ask for Operator 25

# ARMCO STEEL BUILDINGS



## RTW HYDRAULIC TRACK LINER

**More track lined per hour with  
Minimum effort and expense**

The RTW Hydraulic Track Liner—Model P-O—was devised and designed by railroad engineers thoroughly familiar with maintenance of way problems.

A light rigid self contained attachment with double flanged rollers used with the P-O Track Liner adjusts to any height or weight of rail. It supports a portable air-cooled 8 horsepower gasoline driven engine. This power plant can be used with two hydraulic rams for lining thru switches, road crossings, etc., as well as supplying power for the attachment for out-of-face lining. Its light weight and portability reduces operator fatigue.

**Railway Trackwork Co.**

3207 KENSINGTON AVE., PHILADELPHIA 34, PA.

**Upper left—Model P-O gasoline engine powered Hydraulic Track Liner operating two hydraulic rams.**

**Upper right—Model P-O gasoline engine powered Hydraulic Track Liner operating attachment with double flanged track rollers, adjustable for any height and weight of rail.**

**Lower left—Model P-O gasoline engine powered Hydraulic Track Liner and two hydraulic rams mounted on wheelbarrow type frame that can easily be operated or transported by one man.**

**Lower right—Model H-O Hydraulic pump, light weight, hand operated, that will supply power for one (as shown) or two rams. Ideal for small gangs.**

This equipment is also available mounted on a wheelbarrow type frame that can be transported by one man for use in heavy traffic areas.

The hand operated hydraulic pump, available with either one or two hydraulic rams, is ideal for spot lining with small gangs.

The interchangeable units of these highly portable power operated Hydraulic Track Liner combinations afford a smaller force, the equipment necessary to do the work that normally would require heavier oversized machines and a large crew.

**Write for complete details today**

### TRACK MAINTENANCE MACHINERY

Rail Grinders • Switch Grinders • Cross Grinders • Surface Grinders • Rail Drills • Ballast Extruders • Bit Sharpeners • Tie Nippers • Grinding Wheels • Cut-off Wheels • Track Liners



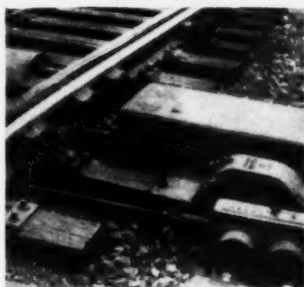
Rail Joints



Bridges



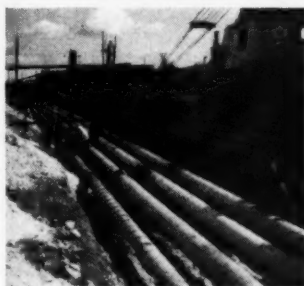
Stored Materials



Signal Equipment



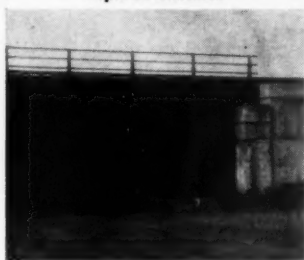
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**There is a DEARBORN NO-OX-ID.<sup>®</sup>  
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NO-OX-ID PROTECTS...NO-OX-ID SAVES

**Dearborn<sup>®</sup>** Chemical Company

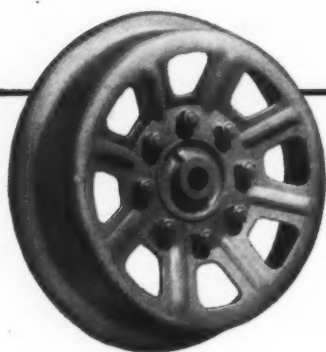
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**Standardize on Longer Life...**

## **FAIRBANKS-MORSE Steel Wheels**



**Conform Strictly  
to  
A. R. E. A. Standards**

When you need replacement wheels in 20", 16" or 14" sizes, standardize on F-M quality for longer life.

Every step, from sheet steel purchase to finished wheel in stock, is under Fairbanks-Morse inspection and control. Every wheel is cold formed in our own plant, on our own presses using our own modern dies... is machined and finished to a design of simplicity and strength. Extra thickness and hardness are provided at the areas of greatest wear.

This constant control of quality is your assurance that F-M demountable wheels are the sturdiest track car wheels on the rails today. Fairbanks, Morse & Co., Dept. RTS-12, Chicago 5, Illinois.



## **FAIRBANKS-MORSE**

**a name worth remembering when you want the BEST**

DIESEL LOCOMOTIVES & ENGINES • MOTOR CARS & RAILROAD EQUIPMENT • ELECTRIC MOTORS • GENERATORS • PUMPS • SCALES • WATER SERVICE EQUIPMENT • HAND LAMPS





## → 700 SERVICE-FREE YEARS! ←

Hundreds of HURCOLS in service on Class 1 Railroads have run up more than 700 service-free years.

The total replacement parts business from *all* our HURCOL customers totals up to less than the price of two tickets to a Broadway show!

Let us prove the HURCOL'S superiority on your own road.

### Features of the HURCOL Rail Lubricator

Still only \$392, with two applicators—delivered anywhere

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- Operates at any speeds
- Uses standard grease — is easily refilled
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- Can be installed inside or outside of rail
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Arrange To Test The HURCOL Lubricator At Our Expense.

Ask Us For Details . . .

**H. T. KENNEDY COMPANY, INC.**

67 WEST 44TH STREET · NEW YORK 36, N. Y.

## WHEN THESE MEN LIVE IN CAMPCARS...



these men ride  
the gravy train



The gravy-train is that wonderful train that rides the route to that Never-Never Land of low operating costs and high productivity.

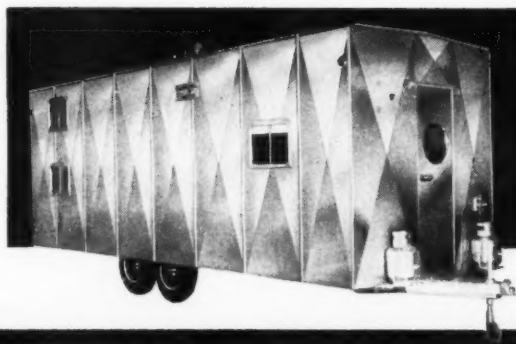
It's an Ever-Ever Land to those railroads that use Morrison CAMPCARS to move, house and sustain their M/W Crews. Their operating costs drop immediately for CAMPCARS offer mobile housing that cuts down portal-to-portal pay time, travel time, food and lodging costs. Actually CAMPCARS can house 8 men for what you presently are paying to house one!

Morrison CAMPCARS are built by railroad men! The 30 year experience of Morrison-men in supplying railroads with important equipment is reflected in the quality, built-to-take-it construction of CAMPCARS and their unique and practical design. They afford commodious off-track housing that builds crew morale, working incentive and higher productivity. They are clean, sanitary and completely equipped to enable 2 to 50 men or more to live and work at remote spots independent of utilities or service for a week to ten days.

To learn more about this wonderful ride on the gravy-train, write for your copy of our fact-packed CAMPCAR brochure and the names of the important railroads that presently use them.

**MORRISON**  
RAILWAY SUPPLY CORP.

1437 BAILEY AVENUE • BUFFALO 12, N. Y.



# BURRO CRANES

Handle Continuous  
Rail From  
End to End . . .

## Speed Track Programs On Many Roads

The wider acceptance and increasing use of continuous welded rail has added another to the long list of jobs Burro Cranes are doing on the railroad today.

Track men learned at the outset, that these powerful, close-coupled railroad cranes could handle almost every phase of continuous rail operations from unloading rail at the welding site (above) to final positioning of the continuous rail. While most railroads use their Burro Cranes in the same manner for handling and laying the rail, maintenance-of-way men agree that the Burro is proving, once again, to be "the busiest and most efficient worker on the track." The powerful drawbar pull, excellent traction, and close-coupled design of Burro Cranes makes them ideal for the pulling, lifting and shifting required



Fig. 1

in handling welded rail. Although different railroads have developed individual techniques in setting the welded rail into place, the basic job is to move the rail from the shoulder where it has been unloaded, and placed in laying position.

One of the most successful techniques observed by Cullen-Friestedt engineers is illustrated here. In Fig. 2, a Model 30 Burro is seen shifting the new rail from the shoulder to the center of the track. A threader, suspended from the boom of the crane, guides the rail as it is lifted from the shoulder by the Burro backing down the track.

After the rail is shifted to the center



Fig. 4



Fig. 3

of the track, the next operation, throwing out the old rail can also be handled by the Burro.

After ties are adzed and new tie plates are in place, the Burro moves

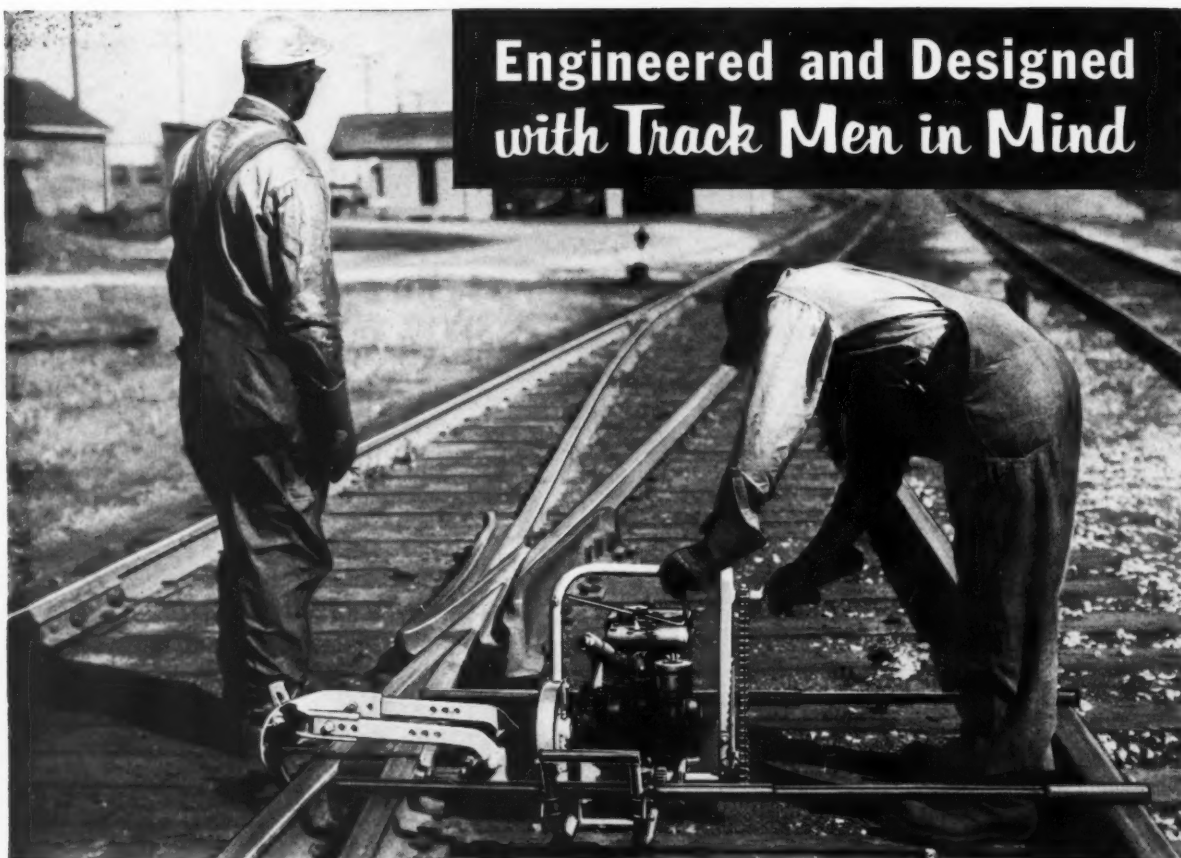
forward (Fig. 3) shifting the continuous rail from the center of the track onto the tie plates which have been properly guaged. General practice is to spike every fifth plate. A close-up view (Fig 4) shows the positioning of the rail on the tie plates. Burro Rail Tongs are used to handle the rail in this operation, as they permit better control as the rail is set to guage. Write for Model 30 Catalog — contains complete details, specifications and operating data. Sent without obligation.

**CULLEN-FRIESTEDT CO.**  
1301 S. Kilbourn Avenue  
Chicago 23, Ill.



Fig. 2





**Engineered and Designed  
with Track Men in Mind**

## **WESTERN** FORMERLY BUDA **Power Track Drill**

Here is a vital piece of equipment in keeping track modernization, expansion and maintenance programs in high gear—the Model P power track drill that has ALL the features essential to economical operation.

**EASILY SET UP...and ACCURATE.** Can be located from top of rail (with optional telescopic support and locator rods) or positioned on ties and ballast (with long overclutch and adjustable rail guide). No change in set up necessary while working on same size rail.

**COMPACT and PORTABLE.** Weighs only 130 pounds. Can be started, operated and slid along the rail *by one man*. Easily carried overland by two men.

**DEPENDABLE.** Gives all-weather, long-life service. Powered by easy-starting  $1\frac{3}{4}$  h.p., 4-cycle Briggs & Stratton air-cooled gas engine. Equipped with Tim-

ken roller thrust bearing. Versatile spindle sleeve handles all flat drills from  $\frac{1}{16}$ " to  $1\frac{1}{16}$ ".

**SAFE.** Can be released and removed from track within 10 seconds... no stopping and backing off.

**CONTROLLED FEED.** Avoids broken and prematurely dulled drills. Sensitive crank-chain mechanism allows operator to vary the thrust accurately according to the hardness of the rail and sharpness of the drill.

**FAST.** Drills  $1\frac{1}{8}$ " hole in 90 lb. rail in 30 seconds... in 155 lb. rail in less than 90 seconds.



## **HYDUTY-PAULUS MANUAL TRACK DRILL**

A track maintainer's tool that every section house should have. Special safety and adjustment features assure precision drilling plus instant emergency detachment.\*

0803

*Write for  
Detailed Information*



# **WESTERN**

**RAILROAD  
SUPPLY  
COMPANY**

*Division of Western Industries, Inc.*

**2400-2434 South Ashland Ave. • Chicago 8, Illinois**  
IN CANADA: Melville Machinery Co., Ltd., Montreal 3, Quebec

One of a series of ads featuring new WESTERN products formerly supplied by BUDA





LOADED car has two complete "packaged" turnouts with the parts of each separated in the car and properly tagged.

## 'Packaged' Turnouts...

... are proving advantageous on the Santa Fe. They give assurance that all required material will be on hand when needed. Also, installation is easier because of pre-assembly of some parts and because much field cutting and drilling of rail is eliminated.

When turnouts are "packaged" in cars like this...

...There's no worry about missing parts in the field.



UNLOADING is easily done by a crane with one man in the car and two more on the ground.

● "Notice that the turnout parts are laid in place almost as fast as the crane can unload them," said J. E. Cooper, Santa Fe's division engineer at Corwith yard, Chicago. He was referring to the unloading of a car containing two complete turnouts—called "package" turnouts on the Santa Fe—for installation as part of a project for enlarging and modernizing the yard.

Ordinarily, package turnouts are furnished only in connection with the Santa Fe's new-rail program. But, in the case of the Corwith yard project, where each turnout had to be "tailored to fit" a particular location and where the total number of turnouts required approached that needed for a whole year's program of new rail, it was decided to make an exception and to apply the package-turnout system to the Corwith requirements.

The idea for shipping turnouts in package lots originated with F. J. Steinberger, the road's general purchasing agent, when he noted that, when switch points, frogs, guard rails and component parts were shipped in carload lots for distribution, it was not unusual to find that some of the material either had

not been unloaded or requested and was missing at the time of installation. This made necessary to wire for missing parts and make passenger-train shipments to avoid further delay to the gang installing the turnout. Mr. Steinberger reasoned that, by shipping complete turnouts in one car, there would be maximum assurance that all the necessary material would be available at the point of use when the car was unloaded.

The engineering department agreed that the plan was both feasible and desirable. In actual application it was decided to broaden the plan to include all the rail required so as to reduce rail cutting and drilling in the field, and to end harden the rails before shipment, thereby eliminating the need for a welding gang to make a special trip later on.

The Santa Fe adopted the package-turnout system for its 1956 new-rail program. The experience revealed several advantages over the former method of shipment. First, it insures that every part except the ties—from the rails to the cotter keys—needed for the construction of a turnout will be on hand at the point of use. Second, it reduces field work because all rails—both dimen-



MATERIAL is laid at Corwith yard on previously placed ties as fast as it can be unloaded.

## Packaged turnouts . . .



### Small parts gathered

Many of the smaller parts are loaded into steel drums to keep them from scattering while the car is in transit. Drums are tagged.

sion and full lengths needed for both the main and turnout tracks—are drilled at the shop, with the holes peened, and end-hardened. Third, because all rails are numbered with respect to the switch points, both for the side and main tracks, installation in accordance with the road's standard plans is facilitated. Also, because the packaged turnouts are complete for both tracks, it is possible to install them in advance of material distribution for the rail-laying gang.

Finally, the package turnouts are easier to install, say Santa Fe engineers. The switch points, complete with the heel assemblies, are bolted onto the straight and bent stock rails. The guard rails, complete with clamps, fillers, end blocks, etc., are mounted at their proper location on their appropriate running rails. Hence, when these unit assemblies are unloaded, they can be placed where they are to be laid, and no rail cutting or drilling is necessary.

The package turnouts are assembled and loaded into cars by the road's stores department at Newton, Kan., under the direction of L. Herring, Middle Division storekeeper. They are assembled in accordance with bills of material furnished by the chief engineer's office. These bills of material indicate whether the switch is to be hand or machine-operated or is for a spring switch; the installation is for a full turnout, for half a crossover or a full crossover; the track centers are 14 ft or 17 ft where crossovers are involved; and the turnout is to be installed at the time the rail gang is laying new rail or in advance of the laying.

### Planning the requirements

In September or October, when the new-rail program for the following year has been decided upon, each general manager of the system's four grand divisions makes a list of the turnouts, completely described, that are needed for package turnouts, together with approximate delivery dates, and sends this statement to A. M. McHenry, the road's general storekeeper at Topeka, Kan. His office, in turn, makes requisitions for each



### Trucked to platform

Larger parts for each turnout are assembled in easily handled units, tagged, and taken on platform trucks to the loading dock.

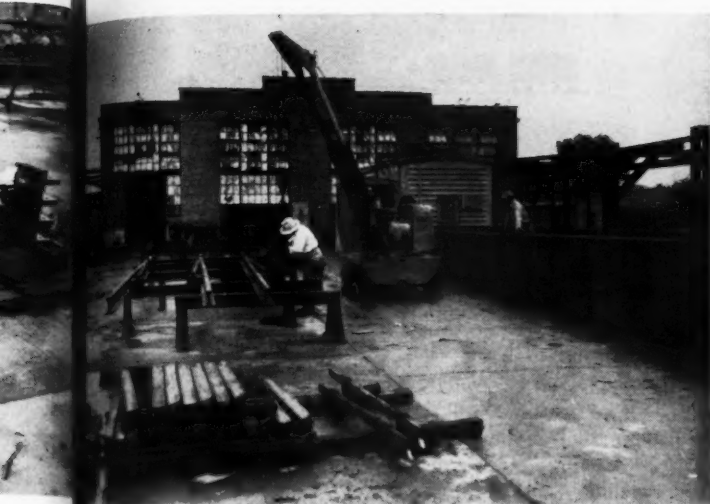
general manager's territory, based on actual requirements, and places orders on the purchasing agent for the material to be purchased. Delivery dates are specified, insofar as is possible, so as to avoid double handling at the rail mill.

Not all of the turnout material is purchased in finished form because the road's rail mill at Newton makes the switch plates, switch rods (but not the front rods), switch heel plates, guard rails, end blocks, clamps and gage plates.

Storekeeper Herring assigns a number to every turnout to be used with the new-rail program and issues work orders on the mill for the items to be fabricated there. The rail mill can then work out schedules to produce the necessary items on a quantity basis in advance of the time they are needed. The rail mill fits and assembles the points on the stock rails, places a temporary clamp at the tip end to keep it from swinging while in transit, and mounts the guard rails on their respective running rails. It also cuts, drills and end-hardens all of the rails required. All holes drilled in the rails are peened.

Storekeeper Herring also makes a list of all material to be loaded into a car. Two complete turnouts are loaded into a single gondola car. A loading gang, consisting of a leader and three men, gathers the smaller material, such as the tie plates, twin plates, slide and heel plates, adjustable braces, joint bars, bolts, washers, rail anchors and drive spikes, and loads them in steel drums. The several drums are placed by a crane in one corner of the car and are banded together to prevent them from overturning while in transit. Also, kegs of spikes, bundles of treated tie plugs, insulated joints, switch rods and gage plates are loaded into the same end of the car. For the second turnout, the same material is loaded at the opposite end of the car.

All of the rails required for one turnout, including those on which the switch points and the guard rails are assembled, are loaded along one side of the car and the same complement of material required for the second turnout, is loaded along the opposite side. The frogs



### Switches are assembled

Switch points are mounted on the stock rails, insuring perfect fit in addition to having every necessary part on hand down to the cotter keys.

are placed along the center. All material for each turnout is identified by having the assigned turnout number painted on it.

### They're easy to unload

While the rails, stock rails with switch points, frogs and rails with guard rails attached are being loaded into the car, a keel mark is chalked across the ball of the rail at its center of balance so as to facilitate the unloading.

The turnout material is unloaded in the field by a crane and all major parts are placed close to where they are to be installed. Where unloading and related conditions are favorable, turnouts have been unloaded in as short a time as 20 min.

To date, nothing but favorable comments have been voiced for the package system. Roadmasters and foremen like it because it not only makes their work easier and avoids much rail cutting and drilling in the field, but it also precludes delays to both the rail gang and the installing gang because all parts are on hand. Freed from the necessity of closely supervising the cutting and drilling of rails, the foreman is permitted to concentrate his attention on the installation of the turnout, thereby securing a better installation and alinement.

As for the stores department, Mr. Herring says:

"The package system has the advantage of catching shipping mistakes before they are made. No car leaves this place unless the turnouts are complete, because it is checked carefully. If any material is short, the car is held up until it is loaded.

"It also gives prestige to our department because we are found to be reliable and doing a good job. It gives our men more interest in their work as it is a challenge when we have to figure out in advance what is needed. I don't think we will ever go back to the old system. If anything, it will be extended to include our second-hand rail program, although, at present, we don't have the plant to handle the additional work that will be involved."



### Balance point marked

Each major unit is balanced and keel-marked to facilitate unloading work in the field.



### Ready for shipment

Three turnouts can be loaded in one day, and sometimes four. Steel drums are strapped together to prevent overturning.



# Taking the wait out of weighing

Now you can  
weigh coupled cars  
in motion.

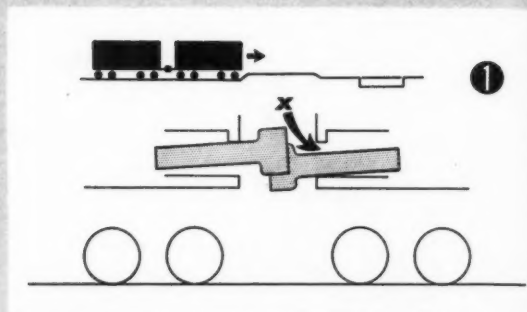
These two  
"humps" do it . . .



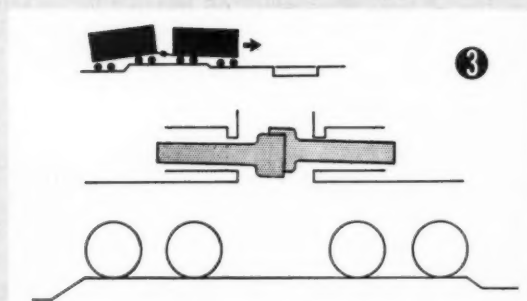
UP—As the lead car's trailing truck goes up the "hump," the couplers are deliberately misaligned.



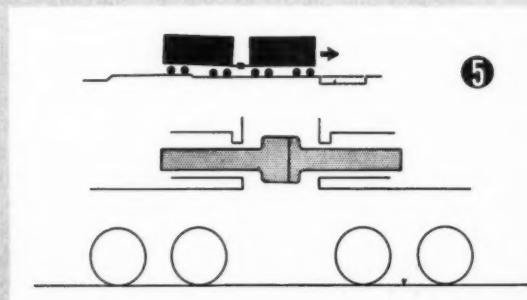
DOWN—As the truck descends the Rail-weight "hump," the couplers are aligned, eliminating binding.



Coming into a yard off the main line, the positioning of the connecting couplers of any two adjacent cars will vary. Very seldom will they be accurately "in line." Each coupler has a certain amount of vertical movement between the upper and lower faces of the striking casting in the car end sill. Let this amount of vertical coupler shank "play" be designated as "X."

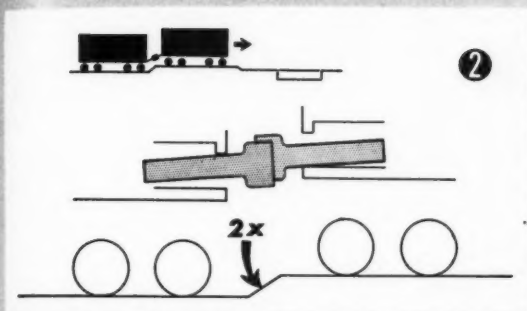


As the lead truck of the trailing car ascends the Rail-weight "hump," the deliberate coupler misalignment achieved in step 2 is unchanged, still equal to X. The couplers, it must be borne in mind, are in constant tension as a result of the train movement.

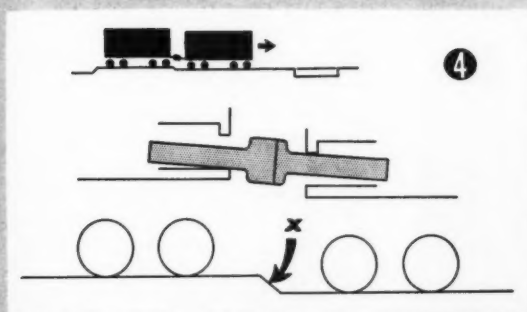


As the trailing car descends from the Rail-weight "hump," the coupler relation established in step 4 is maintained. The couplers connecting the two cars are now aligned and, since neither is in contact with the upper face of its striking casting, there can be no transfer of vertical load (car weight) from one coupler to the other.

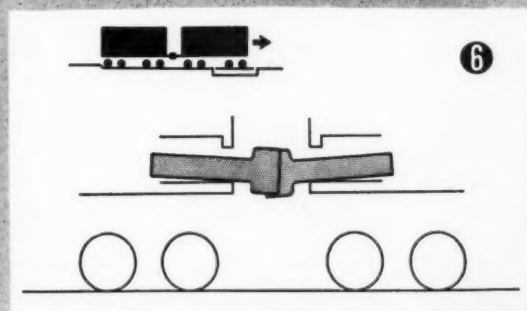




As the trailing truck of the lead car ascends the Railweight "hump," the trailing coupler of the lead car is deliberately misaligned with the lead coupler of the trailing car. Since the hump rise is equal to  $2X$ , the couplers are vertically displaced with respect to each other by the distance  $X$ .



As the trailing truck of the lead car descends from the Railweight "hump," the upper face of the lead car's striking casting contacts the coupler shank. Since the vertical descent from the hump is equal to the value  $X$  (the coupler "play"), the lead car's coupler is forced into alignment with the trailing car's coupler.



Even if the train should slow down and relieve the coupler tension, the alignment established by passing over the "hump" will remain and each coupler shank will rest on the lower face of its striking casting. Car weights are taken—one truck at a time—as the cars move over the one-truck capacity scale. The two truck weights thus obtained are added together to arrive at the total car weight.

## How it Works—

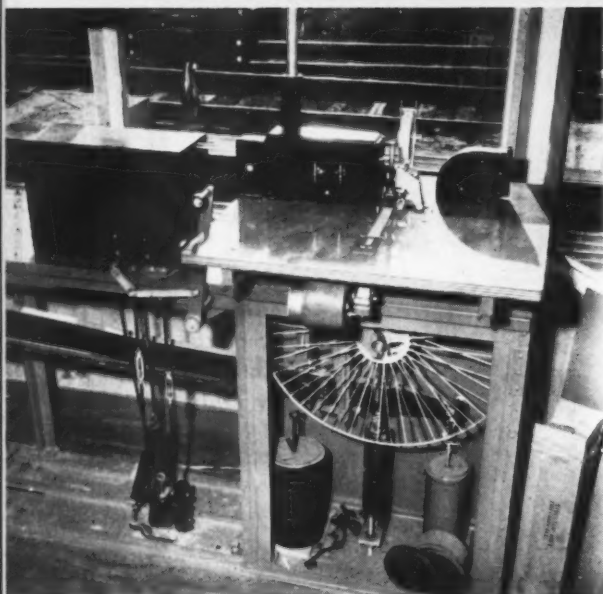
The Railweight method of car weighing was developed and patented by Edward R. Marden of Aurora, Ill. The key to the method, the elimination of weight transference from car to car through the couplers, is deceptively simple. Here's how it works:

- One bottleneck in speeding up the handling of revenue cars has been the delay invariably incurred by the need for weighing cars carrying commodities shipped under weight agreements. Thus, the need has long been recognized for a faster weighing method—faster by far than the static method most commonly used, and faster even than the most modern in-motion hump scales.

The ideal method of weighing, it has long been reasoned, would be weighing cars, coupled and in-motion. Every time it was tried, however, transfer of weight from car to car through the bound couplers introduced such wide variations from true weight that results were completely unacceptable. And then came the "Railweight" method.

Railweight, according to its developers, the International Railroads' Weighing Corporation, Indianapolis, Ind., can weigh cars accurately, coupled, and in motion. Unveiled in October at the Monon's South Hammond (Ind.) yard, the method has already attracted much interest. Installation of the components which comprise the method can, it is claimed, be made right in the yard lead tracks so as to weigh each car as the train enters or, for that matter, leaves the yard.

The method itself, devised by Edward R. Marden of Aurora, Ill., vice-president of IRWC, seems deceptively simple. It consists of a slight "hump" in the approach track to the scale, followed by a slight dip and a conventional two-draft track scale. Speed over the scale is limited only by the "recovery time" of the



**LEFT**—Recorder used in the test installation is a standard Streeter-Amet tape imprinter type. According to the developer, the speed of the weighing method is limited only by the "recovery" time of the scale and recorder.

**SCALE** is a standard two-draft type Fairbanks-Morse knife-edge model. Existing two-draft scales may be adapted to the Railweight method, according to the developer.



**TEST SITE** is located in the Monon's South Hammond, Ind., yard. Extensive research has been carried out by the developer to determine factors involved in weighing.

scale and its attendant recording equipment.

The first question, to many minds, is: What about accuracy? Isn't there weight transfer from car to car through the couplers? The facts are, however, that in hundreds of tests the accuracy of the weights was reported to be well within the required 0.2 per cent tolerance. And, insofar as transfer of weight from car to car through the couplers: There isn't any. The means by which this is accomplished is described in detail elsewhere on these pages.

### Weigh now—pay later

Samuel H. Levinson, president of IRWC, points out that the Railweight weighing method will not be sold. It will, instead, be installed by the company and then licensed to the railroad on a fixed-fee-per-car basis.

M. J. Buchman, executive vice-president of the firm, explained: "Our studies have revealed that it costs the railroads an average of at least \$10 for each of the approximately 22 million weighings they make each year . . ." The Railweight method, it is claimed, will do the job at a cost "of about \$2 per car," and, in addition, can completely eliminate the usual delay incurred by weighing—especially in flat yards.

Installed nationwide, the Railweight method, according to its developers, can cut weighing time to the extent that the railroads will, in effect, gain 25,000 more cars. Installed in yard lead tracks, it could completely eliminate the need for separate weigh trackage, extra equipment, crews, etc. Less damage loss can also be achieved, the firm pointed out, by eliminating the usual recoupling impacts and, since all cars can be weighed in any train, overloads can be instantly detected and rectified.

Practically any type of recording equipment can be incorporated with the Railweight method, the developers point out. IBM card punching, tape printing or punching, or any method capable of fast recovery for in-motion weighing, can be used—depending upon the individual railroad's preference. Depending upon the circumstances, portions of existing two-draft scale facilities can possibly be adapted to the Railweight system.

## ATTENTION FOREMEN:

# What your supervisor expects of you

By **N. H. Williams**, Division Engineer,  
Delaware & Hudson, Oneonta, N. Y.

**Do you, as a foreman, have a satisfactory relationship with your supervisor? If not, perhaps it's because you are neglecting some of the points raised by Mr. Williams in this article.**

**Next month the shoe will be on the other foot. Don't miss, in the January issue, Mr. Williams' discussion of what the foreman expects of his supervisor.**

● A person who directs the work of others, who is responsible for the actions of these individuals, their production and their effectiveness, is a manager.

A track foreman and a B&B foreman are managers. They are proud men, a distinctive breed, using a language developed by their particular calling that sets them apart from men

who are employed in other industries.

Track foremen and B&B foremen have positive identification with the product they help to manufacture. They are called railroaders. They are proud to be known as railroaders and they are proud of their railroad. These group leaders are the backbone of the maintenance-of-way department organization and, therefore, important members of the management team. To the people they direct they are management, for they are group managers.

Management is a group of individuals united in a common cause of directing human and material resources toward a common goal. That goal is to maintain the economic health of the railroad. Economic health is measured in terms of net income. The amount of net income available for dividends, new tools, new machines, new buildings, better tracks, and facilities for manufacturing railroad transportation is directly affected by the way a foreman communicates the policies, objectives and procedures of his company to his group. A foreman is expected to get things done by getting people to do things for other people economically and efficiently.

### Loyalty and safety

A supervisor expects that his foreman will be loyal, that he will be proud of and speak well of the company he represents to his people, to

his friends, and to his neighbors. The foreman is expected to maintain safely and economically the territory he is responsible for, using every measure available to promote the use of safe practices and procedures in carrying out the work.

A foreman must believe that safety is of the first importance in the discharge of duty and the supervisor expects him to believe that obedience to the rules is essential to safety. Accidents do not happen in the office—they occur in the field and on the job. The foreman cannot direct an accident-free operation by merely telling his group to be careful and not to get hurt. A foreman is expected to believe that safety is not a collection of dry statistics. He is expected to create a safety climate. This is a climate in which the people he supervises accept their individual responsibilities to their railroad and their fellow employees. It is a climate where the will to work safely is created by the best safety device available—a successful foreman.

A successful foreman knows that he is expected to plan accident prevention procedures into all phases of the job. His supervisor wants him to teach defensive safety to his group. Defensive safety is being on the alert for someone else's mistakes and the foreman is expected to be on the alert, ready to take charge of a situation before it can develop into an accident. He must inculcate in the minds of his people the idea that safety is no accident. The foreman is expected to teach the individuals in his group that accident prevention is applied common sense—that safety is using their heads to save their hides. Accidents are never economically justified. *Do you believe it?*

The supervisor expects the fore-

### Foreman rating chart

### The author . . .



Mr. Williams has had extensive experience as a supervisor. After joining the D&H in 1926 his first position of supervisory rank was that of track supervisor. Later he served as bridge and building supervisor and bridge and building master. He became division engineer early this year.

At the 1957 convention of the Bridge & Building Association, Mr. Williams was chairman of a committee that presented a report on the subject "What should the supervisor expect from management and vice versa." The present article is a direct result of his work as chairman of that committee.



## What your supervisor expects . . .

man to execute his work expeditiously and efficiently. This means that the foreman must tell his unit what his objectives are, as well as what he expects from them individually and as a unit. He is expected to give his men a goal to achieve in their daily tasks. A competent foreman directs a group that knows they are not mere cogs in a machine. His group has prestige, a sense of usefulness, and a feeling of importance. It is this ability to lead and fuse a group of individuals into an efficient unit that is the mark of a competent foreman. He directs people who have high morale. You can spot a successful foreman's group of workmen by their attitude, for it reflects pride of accomplishment and knowledge that their work has been well done.

A supervisor expects that the foreman will do all in his power to see that his people are given humane treatment and that the dignity of the individual is preserved. A foreman should be familiar with the provisions and interpretations of the various labor agreements so that his working assignments will conform to the labor agreements. In his direction of the work the foreman is expected to give full consideration to the establishment and maintenance of good labor relations. A supervisor expects that the work will be done in accordance with the regulations of the various municipalities, state and federal governments, insofar as it is within the power of the foreman to do so.

The successful foreman will prod any of his group who are merely physically present at a given time and place and who deliver a minimum number of trained motions during their tour of duty. He is expected to give an individual a pat on the back for a job well done, as well as a swat on the backside for a poor piece of work.

A supervisor wants the foreman to be successful. A successful foreman uses his imagination and ingenuity in planning the work assignments. The foreman is expected to use more brain-hours and fewer man-hours in

getting his work completed. Careful planning, efficient execution of the plan, constant review of the operations to see how well the plans are working out, then improving the methods used, is the feedback technique used by a modern foreman. *Will you do it?*

### Safe-guarding company property

Protection of company property is one of the fundamental duties of a foreman. Good housekeeping is, of course, always expected by the supervisor. This means that the territory must be kept presentable with usable materials neatly stored and scrap materials disposed of promptly. The supervisor expects the foreman will see to it that the use of company-owned tools, equipment, and other assets is properly policed to prevent their loss, damage, or misuse.

Paper work is necessary for the orderly transaction of business. The foreman is required to prepare necessary reports and his supervisor expects that they will be legible and correctly prepared, then forwarded to headquarters with reasonable promptness. He is expected to maintain useful records and files so that data are available to the supervisor when he requires the information. The foreman is expected to see that bulletins about available positions, awards of jobs, posters, and various notices are placed where his people have access to them and that they understand their meaning and intent.

The supervisor expects that the foreman will keep "waste items" to a minimum. Waste items are things that cost money needlessly. Overtime is a waste item. Careless acts that damage material or equipment are waste items. Aside from the human suffering involved, personal injuries are waste items. These waste items are areas where savings can be made that would provide money to do productive work or purchase additional equipment. The supervisor expects the foreman to be a manager

### Self-rating chart for foremen

The greater the number of these questions you can answer with a "yes" the higher your rating as a foreman. You can boost your rating still further by giving special attention to the areas of performance where a "no" answer is now indicated.

and eliminate waste items. *Will you do it?*

There are times when work-train service is essential to carry out the work, but the supervisor expects the foreman to fully consider the use of off-track equipment, the use of local freight service, and/or the economies of renting contractor's equipment, when available, so that work-train service can be held to an absolute minimum.

When the foreman requests work-train service, or it is assigned to him for his use, the supervisor expects the foreman to think about the job to be done in advance of the execution of the work. He expects that the problem will be taken to bed with the foreman and that before he goes to sleep he will mentally review the job to be done so that when the work is actually performed he will have formulated a flexible plan that can be put into execution to meet the fluid conditions that he encounters in the field. Efficient utilization of essential work-train service is an area where a foreman has an excellent opportunity to display his managerial talent and ability.

Railroading was developed by pioneers. On August 8, 1829, the Delaware & Hudson Canal Company's "Stourbridge Lion"—the first steam locomotive to run on rails in the new world—ushered in a new era. Thus began a period of fabulous growth in our country as the railroads spread

**"You can spot a successful foreman's group of workmen by their attitude, for it reflects pride of accomplishment and knowledge that their work has been well done."**



- 1) Are you loyal to your supervisor and the company you work for? \_\_\_\_\_
- 2) Do you maintain a "climate" conducive to safety among your men? \_\_\_\_\_
- 3) Do you execute your work expeditiously and efficiently? \_\_\_\_\_
- 4) Do you give full consideration to maintaining good labor relations? \_\_\_\_\_
- 5) Do you use imagination and ingenuity in planning your work? \_\_\_\_\_
- 6) Do you take good care of company-owned tools and other property? \_\_\_\_\_
- 7) Do you prepare your reports legibly and with reasonable promptness? \_\_\_\_\_
- 8) Are you successful in eliminating or minimizing wasteful practices? \_\_\_\_\_
- 9) Do you hold work-train service to an absolute minimum? \_\_\_\_\_
- 10) Do you use "bold and resourceful" thinking in conducting your work? \_\_\_\_\_
- 11) Do you study and question every detail of a job? \_\_\_\_\_
- 12) Do you reduce emergencies through planning and creative thinking? \_\_\_\_\_
- 13) Are you both a good listener and able to express yourself? \_\_\_\_\_
- 14) Do you maintain cordial relationships with other departments, etc.? \_\_\_\_\_

from the Atlantic to the Pacific. The railroaders who pushed the rails westward developed new ideas and invented new methods. They were bold and revolutionary thinkers and doers. Their vision, imagination, and ingenuity was complemented by guts and perseverance.

A supervisor expects his foreman to be a pioneer.

#### **"Past practice" not sacred**

With a monopoly in mass transportation, the railroad industry prospered as our country developed. With prosperity and dependence by the public on rail transportation, the pioneering soul of railroading was stifled in a climate of complacency and adherence to the theory that there were no new frontiers to conquer. Insistence by the railroads that "past practice" be the rule and guide of conduct in all operations aborted the birth of new railroading ideas. The challenge of the internal combustion engine has reawakened the railroads and their people and it is resurrecting their pioneering spirit. A supervisor wants the foreman to shun "past practice" in his thinking and expects that he will be a modern railroad manager. *Do you believe it?*

The modern foreman is better able to cope with the railroad's need for bold and revolutionary thinking than his pioneering forefathers. He is better educated and he has a higher

standard of living, with more time available to think, study, plan and improve his ability to get things done through people. A modern foreman follows the principles that Moses' father-in-law pointed out to him in Exodus, Chapter 18, Verse 13. He does not let his group work. He makes them work—his way. *Will you do it?*

What was good enough yesterday is obsolete today. A supervisor expects better job performance by his foremen today with a corresponding increase in the quality and quantity of the work compared with yesterday. This requires the foreman to study every aspect of a job. He must question every detail of the work, asking himself these types of questions: Why is this necessary? What is its purpose? Where should it be done? When should it be done? What is the best way to do it? Who is the best qualified to do it? This is the way the early railroaders developed what we now call "past practice," and the supervisor expects his foreman to do pioneer thinking, flexible thinking, thinking that will change with the times—and do it now.

A modern foreman, using the biblical reference as a text, develops techniques to direct men and machines that move along at a modern pace. The speed with which the work is completed requires intensive planning, efficient direction of the work,

as well as constant review of performance and methods. Working schedules must be maintained and a supervisor expects the foreman to reach his goal.

#### **Keeping the "tool" sharp**

A foreman is a tool of management that requires constant sharpening. Sharpening is done by constant review of performance and the development of better methods of doing the work. It is through planning and creative thinking that the number of emergencies that a foreman is involved in are reduced. A foreman is expected to be a resourceful leader. He is expected to develop men in his gang into competent replacements for himself and replacements for leaders of other groups.

The supervisor expects the foreman to be a good listener, as well as to have the ability to express himself and get his instructions over to his group. He is expected to communicate—up, down and across. His ideas and suggestions are wanted and needed. The modern foreman should apply the Golden Rule in the handling of his people. (This can well mean that he must be tougher in his dealings with his people.)

A modern foreman takes remedial action when and where necessary, telling his people what he thinks of their performance, but he retains their respect, for he commends as well as condemns. The modern foreman cooperates beyond the thin line of departmental jurisdiction and maintains a tactful, cordial relationship with other departments, the shippers he comes in contact with, and his neighbors on the line, so that a mutual feeling of trust and confidence is built up and confirmed by each recurring contact.

The supervisor expects the foreman to improve his ability to get things done through people by improving his knowledge, skills, habits and attitudes. He expects him to use more "brain-hours" and fewer "brawn-hours," to work smarter—not harder. The supervisor expects his foreman to be a pioneer and a manager. *Will you do it?*

**"Efficient utilization of essential work-train service is an area where a foreman has an excellent opportunity to display his managerial talent and ability."**

# WHAT'S NEW IN PILE DRIVING? — PART



# The 'team' behind the hammer

This is the second installment of the two-part series on pile driving begun in last month's issue. While the hammer may be considered the "star performer" in pile driving, the "supporting cast" of crane, leads, power source, and accessories and aids, warrants careful consideration where the aim is maximum effectiveness and economy in pile driving.

● The pile hammer, whether it be powered by steam, air, diesel oil or gravity, can be compared to the star performer in a play—no matter how good it is, without a supporting cast it is relatively useless. In pile driving work this "supporting cast" comprises quite an assortment of equipment—from the crane and leads which support and guide the hammer to the compressors, pumps, generators, earth drills and other accessory devices.

A rundown of what is new in the hammer field was presented in last month's issue of *RT&S*. In the present article, the second of the two-part series, an effort will be made to describe how the "supporting players" have been improved during the past few years to provide all-around better pile driving.

**Leads**—The big change that has come about in pile-driving leads over the past several years has been the trend toward stronger, yet lighter, leads. Welding has almost universally replaced riveting and, in some cases, tubular steel members have been incorporated. In choosing leads for railroad B&B work, a number of features are not only desirable but, often, indispensable.

While many jobs involve vertical driving (e.g., sheet piling, etc.), the majority of railroad jobs require batter driving. Regular pile-driving rigs—on-track or rubber tired—usually incorporate batter leads. It is with the combination crane-pile drivers that batter-driving requirements must not be overlooked. Swinging leads are not considered satisfactory for batter driving; in fact, they are quite difficult to handle for even precise vertical work. For use in conjunction with a crane, therefore, either underhung leads, with provision for fore and aft batter, or ex-

tended four-way batter leads, should be used. The four-way extended leads are considered by many to be the most versatile and desirable for railroad work. Likewise, folding leads and leads equipped with telescoping sections are particularly preferred inasmuch as they facilitate travel on track or on the highway.

**Cranes**—There are many truck, crawler and on-track-type cranes available today which can be readily adapted to railroad pile-driving needs. *RT&S* surveyed a number of railroad B&B men and crane manufacturers to determine the requirements for the average crane adaptable to pile-driving work.

For general pile-driving work, it has been pointed out that a third drum on the crane is extremely desirable, so that there is one drum to accommodate swinging leads, one for handling the hammer, and the third for snaking piles into place.

Other desirable features mentioned frequently by both railroad men and suppliers are: Anti-friction bearings in operating drums and head sheaves; cable-carrying rollers to reduce cable drag when starting hammers where long boom lengths are used; boom peak sheave shaft extensions to accommodate hung leads; fast, independent boom hoist (especially desirable in fixed-lead work where frequent booming is called for); independent swing and travel; and adequate crane lifting capacity. The latter feature, while seemingly rather obvious, is apparently sometimes overlooked. Sheave blocks should be at least two or three-part, depending upon the number of operating drums used.

**Pile-driving rigs**—Thus far we have been discussing mainly the adaptability of combination crane-pile drivers to railroad work. Such equipment has the advantage of versatility, i.e., when not used for pile-driving work, the crane can be utilized for other operations. The thinking among many railroad men, however, is that if there exists a reasonably constant demand for pile-driving equipment, an investment in a regular pile-driving rig is justified.

Two of the latest such rigs to be



FOUR-WAY batter leads are considered by some as a "must" for railroad pile driving work, especially for on-track trestle driving.



OFF-TRACK cranes find many uses in railroad pile driving, are often flat-car mounted.





**JETTING** is often combined with pile driving to obtain easier penetration in relatively hard ground.



**FLASH-TYPE** steam generators are finding considerable application in powering steam pile hammers.



placed in service are the custom-built on-track outfits operated by the Santa Fe.\* These outfits are completely self-contained rigs incorporating hydraulically-operated rams for setting forward and side batter and for raising the 60-ft folding leads. Other features of the rigs include: Separate compressor cars to supply air for the hammers and other purposes; diesel engines with torque converters; 25,000-lb hammer and pile-line capacity at full working radius; jetting equipment; earth boring drills; power supplies for operating both air and electric tools, and complete flood-lighting equipment.

**Steam generators**—Before the advent of the diesel, steam to operate pile hammers was obtained either from the crane's own power plant or from the work train locomotive. Today, most steam pile hammers are powered by either portable boiler units or flash-type steam generators. There are now portable boiler units on the market which are truck mounted and which can be driven to most construction sites. The flash-type generators, compact and relatively simple to operate can, in many instances, be installed within or on the back of the crane cab housing. Most all such modern steam plants incorporate two features which are of especial importance in pile hammer operation: dry steam and automatic control.

**Air compressors** — Some railroads prefer air operation of their pile hammers instead of steam. In some cases, e.g., with the Santa Fe outfit described above, air is preferred inasmuch as boiler water supplies are not always readily available. Others prefer air for reasons of safety and versatility—the same compressor used to power a pile hammer can be used also for a wide variety of other railroad jobs. Also, the use of air eliminates the need for water storage on or near the rig. There are available today many different types of air compressors suitable for pile driving work in a wide range of rated outputs. Like the more compact steam-generating plants, many compressors can be mounted

directly on the pile-driving rig or crane.

**Earth drills**—It is often desirable in railroad trestle work to pre-bore holes for piles in regions where penetration is difficult or where precision setting of piling is desired, especially in hard gravel formations. Pre-boring also eliminates, in many cases, the possibility of pile "brooming." Power-driven earth augers are available today which will drill holes 50 ft deep at diameters up to 42 in. The earth-boring drills now on the market embody a variety of details but all are basically the same in that they utilize the principle of the rotary excavator or suspended auger. In one model, the machine is completely self-contained in that it incorporates its own gasoline engine. This machine can be mounted in the leads.

**Jetting equipment**—The water jet has proven itself of inestimable value in securing the penetration of piling in certain materials. The basic principle of jetting consists of forcing water under pressure through a nozzle to, in effect, form a hole which, in suitable ground material, may be continued to any desired depth. Sandy or loamy soils yield readily to jetting action whereas clay soils offer somewhat more resistance. Jetting is often combined with and sometimes alternated with pile driving. It has the effect, in combination, of lessening the force per blow required in driving piling and thus can eliminate, at least partially, brooming of piles or other undesirable effects.

**Other accessories**—There are a large number of other appliances designed for use in pile driving work which have been developed to achieve the goal stated at the beginning of this article: accurate pile driving in the fastest, safest and cheapest way possible. Among these must be noted various pile capping devices designed to prevent brooming and other damage to the piling itself. Pile shoes, or points, have been devised to secure better penetration of piling in hard ground. Realizing the too-often emergency nature of railroad pile-driving work, the electrical equipment manufacturers have made available an assortment of generators and lighting plants to provide the equivalent of daylight for night operations.

\*RT&S, November 1956.

◀ **TRUCK-MOUNTED** boiler units, with self-contained water supply, serve as versatile steam source.



# What's new about crossties

## ►What are the primary causes of tie failure?

Decay is still the principal reason why ties are removed from track, according to the results of a study of tie-removal statistics made by a subcommittee of the Committee on Checking and Splitting of Crossties. The committee's report was based on data obtained through a questionnaire sent to the chief engineers of major railroads. Of these, 15 roads submitted usable information. The purpose of the questionnaire was to obtain information giving the reasons why treated ties were being removed from main track during the current working season. The results are summarized in the accompanying table.

Only one of the railroads reporting based its data on a field examination of all ties removed from main track. Six replies were based on a field spot check of some ties. Eight replies reflected the opinion of qualified engineering personnel.

It is apparent from the table that decay is the primary cause of ties being removed from main track today. More than one-half of the gum and mixed hardwoods and more than one-third of the oak and pine ties were removed for this reason. Split, plate cut, and spike kill are of next importance as these three causes combined to account for 53 per cent of the oak and fir removed, 44 per cent of the pine, 41 per cent of mixed hardwoods, and 35 per cent of the gum.

"It may be disappointing that decay is so prominent a renewal cause," stated the committee making the report, of which R. B. Radkey, engineer ties and treatment of the Illinois Central, was chairman. "Please remember," continued the report, "these ties were removed from track this year, and the majority are 20 or 30 years old. In many instances, tie production practices and preservative treatments of the 1920's were inferior to methods in use today. Ties in first-class main track receive heaviest usage and must be maintained in best condition, thus the average service life of 25 years for oak, 24 years for pine, 21 years for mixed hardwoods, and 19 years for gum and fir are quite promising. If these re-

**Causes of tie failure, the need for better crossties, the practicability of long-range tie-replacement programs, and the effect of dieselization on tie life were among the subjects discussed at the annual convention of the Railway Tie Association, which was held at the Jung hotel, New Orleans, October 16-18.**

newal statistics included secondary main, side and yard tracks, the average service life would be measurably higher."

The committee's questionnaire asked what service life is anticipated from new crossties being installed in first-class main track today. The replies indicated the railroads are confident that new ties today will serve measurably longer than ties installed 20 years ago, stated the committee. This anticipated life ranges from 23 to 35 years, the average for 14 roads being 29.5 years.

## ►Says "break-through" is needed in crossties

The crosstie producers were urged to use "broad vision and imagination" in seeking crosstie improvements in an address delivered by B. R. Meyers, chief engineer of the Chicago & North Western. Noting that the wood crosstie has held its own for over 100 years, Mr. Meyers described its present superiority to several factors. However, even though nothing has been presented in the way of substitute ties "that can do as good a job as that of the wood tie for the same cost," the threat remains, he stated.

Even though the substitutes for wood crossties that have been tried out to date, "the best of which have been steel and reinforced concrete," are lacking in some of the important qualities needed, that doesn't mean that their promoters have given up, said Mr. Meyers. "And, of course, there are other likely materials which may prove to be just as good as wood; in fact, they may prove to be better and have a much longer life. The field of plastics, for example, is extremely versatile. I have no doubt that a good plastic tie could be pro-

duced today. True, it would be too expensive, but to the plastics industry cost has frequently in the past been only a temporary hurdle. Today's technology has a way of bringing down costs, once it discovers there is a market potential.

"But the fact remains," said Mr. Meyers, "that the wood tie is still our best product. While the average life of crossties has been increased to the point where we can now expect more than 30 years of service, there is still much to be done to get the maximum life from timber." Splitting and checking still present problems that have not been solved. "As for treatment, we can easily disillusion ourselves into thinking that here we are doing a good job. We cannot escape the fact, however, that some treated ties are still being removed from track after only a few years of service due to decay or dry rot. Are we treating ties at the right time and is our treatment penetrating deep enough into the wood?"

What is needed, said Mr. Meyers, is "a major break-through comparable to that of the diesel engine into the kingdom of steam power." Since no one knows more about ties than the producers, they should not arbitrarily limit themselves to wood "simply because it has always worked out in the past," he declared. "Nothing in this land of opportunity prevents you from using other materials, and as tie experts you will know quicker than any one else if you have the answer to the big break-through."

## ►Says five-year crosstie programs are possible

"It is in the economic interest of all parties to stabilize, to the greatest degree practicable, the production, treatment and installation of

cross-ties on a year-by-year basis," said M. I. Dunn, vice-president, operations, of the Chesapeake & Ohio, in an address on "Long-Range Cross-tie Planning."

Mr. Dunn believes "that it is within the realm of attainment to set up 5-year planning for 80 per cent of our normal needs for cross-tie replacement. If we can accomplish that, we will have limited the year-to-year fluctuations to a 20-per cent margin above or below the normal average annual level. Such a degree of stabilization must create beneficial results to both producer and consumer of cross-ties."

"Since tie deterioration goes on at a fairly regular rate, it should follow that the railroads, in their self-interest, and within the framework of their economic ability, should consciously plan to organize their cross-tie replacement programs to secure the most favorable results in the areas of labor force and equipment utilization, and in purchasing practices designed to keep tie prices from reflecting the penalties of peak-and-valley buying."

Is it practicable for the railroads to plan 80 per cent of their tie renewals five years in advance? Mr. Dunn analyzed C&O tie renewals for the 24-year period, 1932 to 1955, inclusive. During this period the railroad (excluding the former Pere Marquette) used in replacement an average of 463,000 cross-ties per year. During 19 of these 24 years, the number of cross-ties inserted for replacement purposes varied no more than 20 per cent from the average of the period. "In other words, from 1932 to 1955, in 80 per cent

of the years, the number of cross-ties used in replacement fell within a 20 per cent range of the period average."

Narrowing the study down to the last 10 years of the 24-year period ending with 1955, average annual tie renewals on the C&O amounted to 494,000 cross-ties. The highest installation year exceeded the average year by only 17 per cent, while the lowest year was equal to 74 per cent of the mean.

Here, in the words of Mr. Dunn, are the benefits the railroad obtains from such stability in its tie renewals: "When cross-tie replacements can be held to such limits of yearly variations, it makes better budget planning possible for the railway and goes far in stabilizing production and treatment of cross-ties, thus utilizing to best advantage the plant investments and labor forces in those industries. These facts provide a basis for my statement that organized, long-range planning can so temper the peaks-and-valleys pattern as to stabilize at least 80 per cent of one's normal cross-tie requirements."

#### ► Effect of diesels on life of cross-ties

The changeover from steam locomotives to diesel power has effected many changes in the railway and supply industries. In an address before the Railway Tie Association, G. M. Magee, director of engineering research of the AAR, gave consideration to the question whether this changeover has had an effect on the life of cross-ties.

He described the results of tests made on the Milwaukee Road in which measurements were taken of

the loads applied to the tie plate and the amount of tie plate motion on tangent track under both steam and diesel locomotives. The studies revealed, he said, that with the diesel locomotives the average amplitude of longitudinal motion was 25 per cent greater than with steam locomotives and the average amplitude of lateral motion was 43 per cent greater than for steam locomotives. From these data it would be expected, he said, "that the rate of tie-plate cutting under the locomotives on tangent track would be on the order of 20 to 25 per cent greater with diesel than with steam locomotives."

Mr. Magee warned, however, against concluding that the rate of plate cutting will be 20 to 25 per cent greater with diesel than with steam power. "Certainly the freight car wheels contribute a substantial amount to tie-plate cutting and they are relatively much greater in number than the locomotive wheels although producing lower tie-plate loads and less motion of the tie plate on the tie. If we were to assume that the locomotive was responsible for 25 per cent of the amount of tie-plate cutting and the train the remaining 75 per cent then we might expect that with diesel power the effect of tie-plate cutting in causing tie renewals might be increased as much as 5 per cent."

"With respect to ties being removed because of being spike killed," said Mr. Magee, "it seems to be the general opinion of railway maintenance officers that they are experiencing more rail wear on curves with diesel power than they experienced formerly with steam power. If so, this will mean that it will be necessary to regage curves because of rail wear at somewhat shorter intervals than formerly, and this could conceivably somewhat increase the amount of tie renewals because of spike kill."

As a result of the changeover from steam to diesel power, it would appear, he concluded, that there would be a tendency for tie life to be somewhat increased in some respects and somewhat decreased in others. "... Taking all factors into account there seems to be no good reason to expect that there will be any appreciable change in the life of cross-ties or the number of cross-tie renewals because of the change to diesel power."

**Reasons for tie renewals in different species**  
(Figures are percentages based on weighted averages)

Type of Failure	Oak	Pine	Gum	Mixed Hardwoods	Fir
Decay	37	36	55	53	4
Crush or shatter	5	11	4	3	33
Plate cut	14	23	10	9	22
Spike kill	12	11	7	13	16
Tamp kill	1	1	1	0	4
Split	27	10	18	19	15
Ring separation	1	4	0	0	2
Derailment	2	2	2	3	3
Other	1	2	3	0	1
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Average years service	25	24	19	21	19
Railroads reporting	11	12	10	7	1
Number of ties	277,701	736,443	24,263	146,648	100,000



# MORE POWER

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Allis-Chalmers' new HD-21 with 225-hp turbo-charged diesel engine provides the power and strength needed to increase productive capacity on today's big off-track construction jobs. This tractor, the latest addition to the Allis-Chalmers line of advanced-design construction machinery, features:

*New 225-net-hp turbo-engine*

*New weight—45,500 lb (bare)*

*New power train and torque converter effectiveness, simplicity*

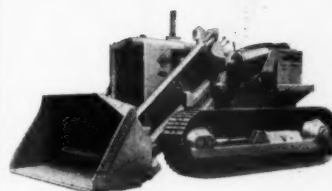
*New, longer track for matched traction, flotation*

*New operating ease and control, with work-saving decelerator*

*New heavy-duty matched dozers*

See your Allis-Chalmers dealer. Let his railroad representative give you all the facts on the new HD-21 and other equipment in Allis-Chalmers' complete line.

Allis-Chalmers, Transportation Sales Dept., Milwaukee 1, Wisconsin



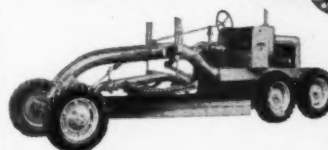
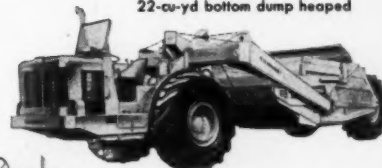
**4 Crawler Tractors—**  
52 drawbar to 225 net engine hp

**4 Tractor Shovels—**  
1½ to 4-cu-yd standard buckets

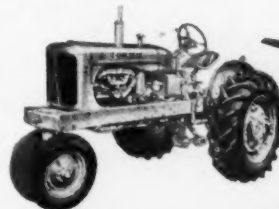
**3 Motor Scrapers—**  
9.5, 14 and 20 cu yd heaped

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22-cu-yd bottom dump heaped

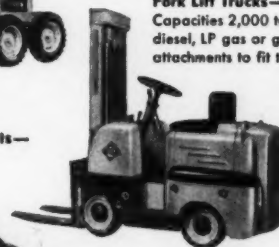
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120-brake-hp Forty Five  
50-brake-hp Model D



**3 Wheel Tractors with attachments—**  
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**Fork Lift Trucks—**  
Capacities 2,000 to 10,000 lb;  
diesel, LP gas or gasoline;  
attachments to fit the job



**Engines and Generating Sets—**  
Types for any power need,  
9 to 516 hp;  
diesel, gasoline, natural or LP gas



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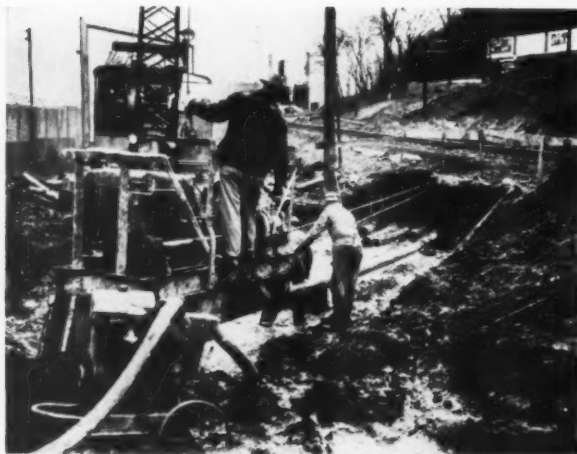
*Engineering in Action*



## News briefs in pictures...



**NEW FREIGHTHOUSE** of the Wabash at Chicago is of rigid-frame construction with a roof of galvanized metal containing skylights of translucent plastic. The structure is 993 ft long overall and has a maximum width of 158 ft. Features include a drag chain, a paging and talkback system and centralized checking.



**ACID SOIL** led to the selection of wrought iron pipe for this crude oil gathering line beneath a railroad roadbed near Bradford, Pa. Five-inch pipe will resist vibration, also.



**SAVINGS** of over \$3,000 in a six-month period were realized by the T. J. Moss Tie Company when they switched to using the Sherman fork-lift and Ford tractor combination shown here for loading ties in railroad cars. Former method involved manual labor.

**EXTENSION** of original brick culvert on the RF&P near Ashland, Va., was made using 120-in Armco multi-plate pipe. Embankment was widened to eliminate sloughing of the fill because of the poor base drainage and steep slope. Original fill is in background.



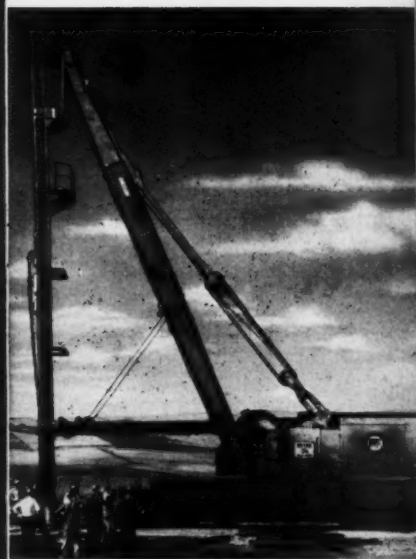


# ORTON

The most **POWERFUL**  
name in CRANES...  
and **PILE DRIVERS**



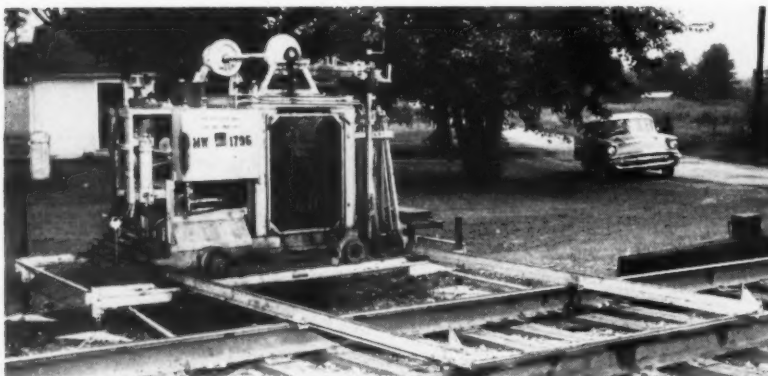
An ORTON Pile Driver *built to specification* hoists, rotates, travels and operates the pile-driver leads, powered by a GM diesel engine with fluid torque converter. Self propelled at 24 mph on level track. Easily negotiates 5% grade; pulls 10 loaded cars weighing 70 tons on level—or 1 such car on 4% grade. Hydraulic pumps and auger attachments. Ask for catalog No. 90.



An ORTON *Combination* PILE DRIVER, 160-ton DIESEL WRECKER and BRIDGE DERRICK *built to specification*. Pendent pile driver leads permit batter in both directions. Can be equipped for use with air or diesel-operated hammer. Above: in use as a pile driver; large photo at left: same machine as a wrecker. Ask for catalog No. 89.

All ORTON cranes operate on STRAIGHT DIESEL POWER. This enables ORTON to give a 10-year guarantee on travel gears without limitation due to accident, derailment, misuse or other cause. Idles at 600 rpm instead of 1800; reduces engine wear immensely; reduces fuel consumption to about 3/4 of diesel electric operation. No danger of setting fire to combustible material on road beds. Moisture—even flood waters, won't immobilize an ORTON straight diesel machine.

ORTON CRANE & SHOVEL CO., 608 S. Dearborn St., Chicago 5, Ill.



Quickly built portable . . .

### Equipment set-off

ON-TRACK machines may be quickly moved into the clear on the approach of trains and returned to the track after their passage by a portable equipment set-off. Among the features cited for this set-off are: Posts which can be adjusted in height to hold the take-off rails horizontal; tie bars which insure placing the set-off a sufficient distance from the rails to clear equipment; and sliding saddles which permit the take-off rails to be moved laterally so that the machines do not have to be spotted exactly.

The set-off consists essentially of four posts with bases, front and back beam assemblies, side tie bars, rail-hook assemblies and take-off rails. The posts, of 2-in extra-heavy pipe, are each drilled their full length with a line of  $\frac{3}{8}$ -in diameter holes on 2-in centers. Locking pins are inserted into these holes for leveling the front and back beam assemblies. The latter have sleeves which are fitted over the

posts, so the beams can be raised and lowered to proper height, and 1-in pipe sockets into which the side tie bars are inserted. The front beam also has two short angles, one at each end, which have several holes drilled in them for attaching the rail-hook assemblies.

The manufacturer states that the set-off can be erected by one man, or two men at the most, in from 10 to 15 min. The four posts are located and made level under each base. The front and back assemblies are slid into place and locked. The side tie bars are attached and the two rail-hook assemblies are connected with the rails. The take-off rails are then laid in place and the set-off is ready for use. It is available in two models: M-100-8 which is 8 ft wide, weighs under 500 lb, and will accommodate machines weighing up to 10,000 lb; and M-100-11, which is 11 ft wide, weighs about 560 lb, and will accommodate machines weighing up to 15,000 lb. *Transport Products Corporation, Dept. RTS, 3008 Magazine St., Louisville 11, Ky.*



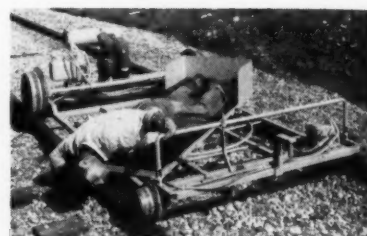
Air tools protected by . . .

### Automatic line oiler

LACK of oil, the most prevalent cause of air-tool damage, is said to be eliminated by a new automatic line oiler which shuts off the air supply when the oil is used up. Designated Model L0380, the line oiler feeds oil the instant drilling starts and shuts off the air the moment the oil supply is exhausted. It is said to be light in weight, easily adjusted to prevent the waste of oil, and refillable while in use.

Differential pressures are used to operate the automatic line oiler. Air is routed through the oiler to create a pressure on the inside of an oil-resistant bellows, which forces a regulated amount of oil through a port and injects oil into the air stream at the outlet end of the oiler. When the oil chamber is empty, the bellows activates a shut-off plunger, cutting off the air supply to the air tool.

The oiler body is made of aluminum, weighs 9 lb, and is of streamlined design, making it easy to move air lines. Less than a foot in length, it is said to be easy to incorporate into air lines or to mount onto compressors. Steel inserts are used at the inlet and outlet air connections, the filler plug, and the oil-adjustment nut. The manufacturer states the device is easy to assemble or disassemble without special tools. Its top capacity is 300 cfm. *Le Roi Division, Dept. RTS, Westinghouse Air Brake Co., Milwaukee 1, Wis.*



Hydraulic drive for . . .

### Foreman's sighting car

A NEW foreman's sighting car, designated Model FSC, has recently been introduced. The car features one lever control for moving the car forward, reverse, or for stopping. The operator's platform rotates 360 deg, allowing the foreman to sight from either rail as well as checking back when necessary. The car incorporates a Wisconsin, air-cooled, Model BKN engine, developing 5.8 hp at 2800 rpm. The hydraulic drive incorporates a Vickers PK1-2000 series power pack with double-acting operating valves and a Vickers M-2-200 series vane-type motor. The chain drive is incorporated to connect the solid axle to the hydraulic motor. The frame is all-welded construction of  $\frac{1}{2}$ -in diameter tubing. Tapered roller bearings are incorporated for the axles and the foreman's platform is padded with stuffed, leatherette-covered caboose-type cushion. *Write: Kalamazoo Manufacturing Company, Dept. RTS, Kalamazoo, Mich.*

Durable all-weather . . .

### Switch lubricant

MAINTENANCE of switch plates and joints will be made easier through the use of a new weather-fighting graphite lubricant called Railroad "60," according to its manufacturer.

Applied like paint, Railroad "60" is said to be impervious to dirt, oil, dust, grit and sand, and, because it is chemically inert, it also keeps out harmful chemicals, such as brine drippings from reefers and oil and grease from locomotives. Also, it is said to resist corrosive effects of weed killers and to put an end to caking and gumming of vital switch parts. According to the manufacturer, it has been subjected to many weather tests and found to be effective at temperatures of 40 deg below zero and at 115 deg above.

Ready for instant use, Railroad "60" is marketed in gallon units and requires no thinning. It is claimed that it remains effective indefinitely while in storage and that there is never any gummy settlement in the bottom of the cans. *Joseph Dixon Crucible Company, Dept. RTS, 167 Wayne St., Jersey City 3, N. J.*



Tractair permits immediate repairs of faulty sections before they reach the point of replacement. Tractor-compressor provides storage for tools and often transportation for the crew.

## Tractair\* Doubles Track-Upkeep Efficiency

Self-propelled tractor-compressor travels on road or tracks to jobs at crossings or at "inaccessible" bridges.

Multi-purpose unit provides maximum "on-the-job" power for air tools—eliminates delays and long hose lines.

A leading railroad credits the Le Roi Tractair 125 and C10T tie tampers with doubling tamping efficiency around frogs and switches in restricted "off-the-highway" areas.

The company's superintendent of maintenance explains that Tractair's mobility brings air supply to any point along the line... permits track repairs without interfering with yard or right-of-way traffic. This easy mo-

bility also eliminates costly handling of heavy stationary compressors—an expense that often discouraged minor repairs that would have extended the life of ties under heavy traffic.

### Gets Close to Job

"With the Tractair, we can drive up to the repair or maintenance point on the highway, put the unit on the tracks by lowering the retractable guide wheels, and get right up to the point on the line where the job must be done," the superintendent reports. "We eliminate stringing compressor lines as much as 150 to 200 ft. to the job, and the consequent loss of 3 to 7 lbs. of air pressure for every 50 ft. of compressor line.

"The 3 in. blade of the C10T permits full-power tamping, even in those tight corners around switch points—places that are normally hard to reach, but where maintenance is needed most."

The tool's high-speed impact often permits tamping directly on the original bed, without jacking up the rails. The superintendent adds that a Tractair with four tampers does the work of a stationary unit using six 800-blows-per-minute tampers, and eliminates the need for a jacking crew at most points. What's more, the men themselves prefer the lightweight, shock-proof C10T because it's less fatiguing than conventional tampers.

### Uses 30 Tractairs

The superintendent states that this Le Roi combination "is best for our requirements" in maintaining the many points that need frequent servicing—and hundreds of other related jobs. "At present, we have more than 30 Tractairs at work on the road, and envision further increases in the future." Tractair can do the same for you. Write us today for complete information and data.

\*"Tractair" is the registered trademark for Le Roi's combination tractor-air compressor.



**LE ROI**

Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Newmatic air tools,

Tractair,® portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.





# What's the answer?

## To be answered in March

Do you have an answer to any of the questions listed below? If so, send it in. Payment—based upon substance and length—will be made for each published answer. If you'd prefer that your name be withheld, we'll gladly comply.

DEADLINE: January 31

- ▶ 1. When laying rail, it is economical to reuse those track spikes which appear to be serviceable? What are the disadvantages of this practice? Explain.
- ▶ 2. What paving materials are best suited for protecting wood plank decks on overhead highway bridges? What methods can be used to anchor the paving to the plank deck? Explain.
- ▶ 3. Generally, what tools (wrenches, etc.) should be carried in the tool box on a production tamper to facilitate on-the-spot repairs to the machine? What spare parts should be carried? Explain.
- ▶ 4. What methods can be used to eliminate water pockets beneath floors in buildings constructed on concrete slab foundations? How can the formation of such water pockets be prevented? Explain.
- ▶ 5. Is water which meets the minimum specifications for use as a diesel engine coolant satisfactory for use in flash-type steam generators? Are there additional chemical properties which should be specified? Explain.

### Send answers to:

**What's the Answer Editor**  
**Railway Track & Structures**  
**79 West Monroe Street**  
**Chicago 3, Illinois**

Do you have a question you'd like to have answered in these columns? If so, please send it in.

## Association dues—who should pay?

To what extent, if any, should railroads pay the dues and other expenses of membership in professional associations such as the AREA, ASCE, B&B Association, Roadmasters' Association, M/W Clubs, etc.) for employees who have shown themselves to be conscientious and interested in bettering themselves? Explain.

### Employees should pay dues

By C. H. MOTTIER  
Vice-President—Engineering  
Illinois Central  
Chicago

The question makes no distinction between "dues" and "other expenses". I think there should be a distinction. The payment of dues by the individual indicates his interest in the work of the association involved. I have always paid my own. I have a different attitude on the payment of expenses and feel they should, within reasonable limits, be paid by the railroad.

If a man does not have enough interest in the work of the association to pay his dues, there is serious question in my mind as to whether the railroad is justified in paying his expenses. If the employee pays his dues, I feel he has the right to express his own views on all letter ballots. If his membership is entirely subsidized by his company there is question as to whether he is entitled to that privilege. This constitutes a major difference between the AAR and the AREA. In the AAR, the railroad representative is presumed to be the spokesman for the railroad. In the AREA he speaks for himself and I believe there is a value in this democratic setup.

If the railroad pays the expenses of the individual, he should appreciate what the railroad does and be reasonable in incurring such expenses. In cases where attending committee meetings involves considerable time and expenditures, and there are several men from the same railroad on the committee, it is proper that the railroad exercise some control over attendance, perhaps by following some method of rotation.

This, however, should be so regulated that all committee members may gain the benefit of attending some committee meetings.

In the case of conventions, I believe a reasonable effort should be made to permit attendance by all whose work will not be adversely affected. If there is no conscientious effort on the part of the participants to keep expenses within reasonable bounds and measure them by the benefit to the individual and to the company, the rights now enjoyed may be endangered by those who have a reckless disregard for the financial interest of their company.

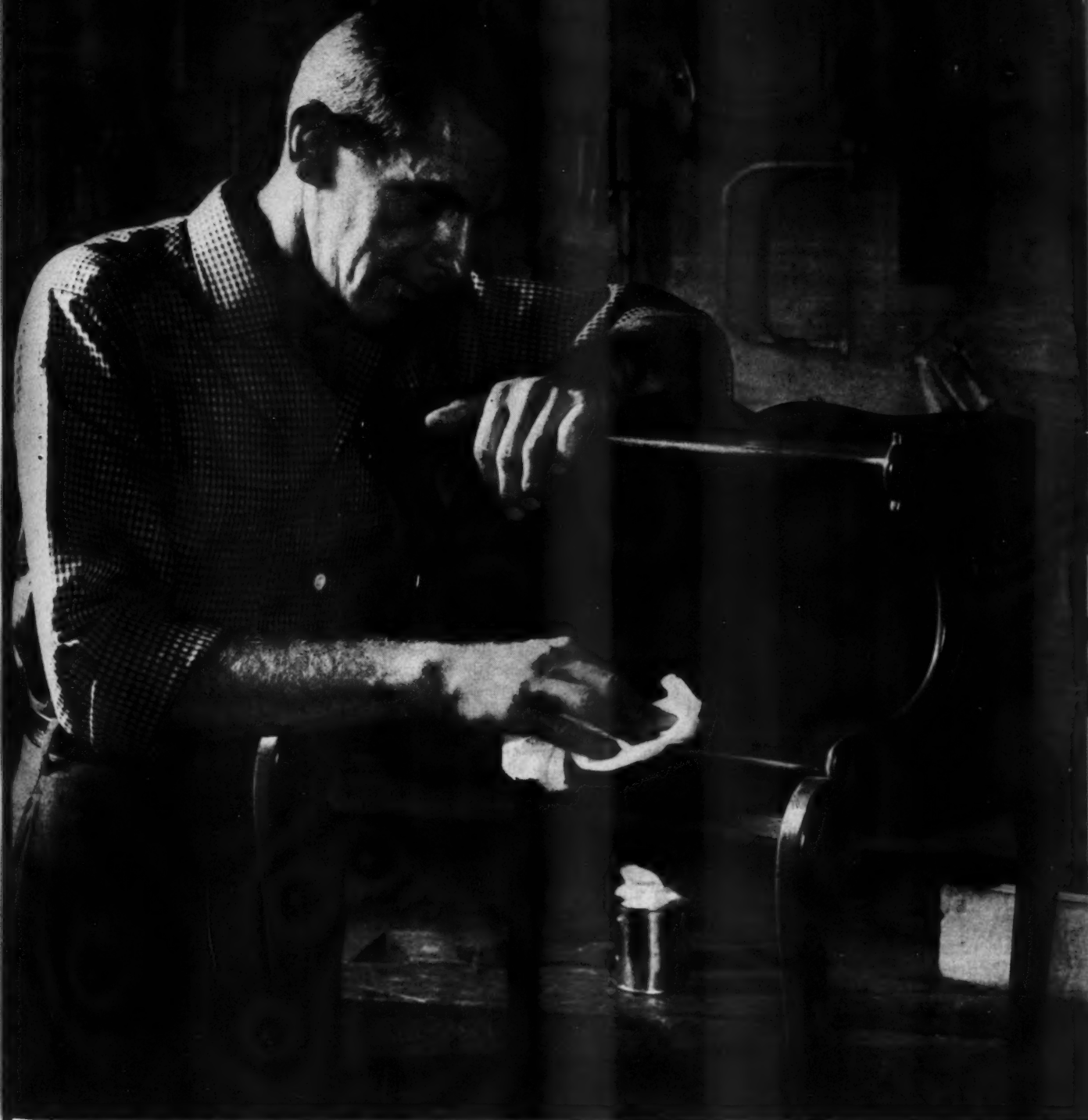
### Membership: 'Mark of distinction'

By JAMES M. SYMES  
President  
Pennsylvania  
Philadelphia

The writer, together with all top management on the Pennsylvania Railroad, has encouraged our personnel, particularly engineering, in having memberships in professional associations that will better their education. Generally we do not pay their dues. We do, however, defray the expenses of the employees attending conventions and contribute, to the extent of time off, for any who are working on committees.

It can well be understood that with a railroad the size of the Pennsylvania we could not in fairness to all single out individual employees who may appear to be more conscientious and interested than others. As a matter of fact, it is a mark of distinction for an employee to belong to professional organizations so that he





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### What's the answer? (cont'd)

may better his engineering training and keep up with progress and advancement in the art of railroading, and the fact that the employee pays his own dues tells management he is conscientious and interested in bettering himself.

There are, however, certain specific cases where management desires to receive information on a particular subject and in that event a qualified engineering employee will be selected and the dues in that particular organization will be paid by the railroad company.

#### Certain memberships paid by RR

By C. J. FITZPATRICK, President  
Chicago & North Western, Chicago

Our policy has been to limit the payment of dues to those associations which set up the specifications and recommended practices we use in carrying out our railroad work. Membership in these organizations paid for by the railway company have been limited to those officers who are responsible for setting up and carrying out railroad policies.

Under our policy the railway company presently maintains the following memberships:

Associations	Number of Memberships
American Railway Engineering Association	6
American Wood Preservers Association	1
Railroad Tie Association	1
Society of Reproduction Engineers	1

We think it is very helpful and advisable for men in the supervisory capacity to hold membership in organizations such as the AREA, Roadmasters' Association, B&B Association and the maintenance of way clubs, such as in Chicago and in the Twin Cities, and we support this position by allowing reasonable expenses for our supervisors to attend meetings. However, we feel the annual dues, which are relatively low, should be paid by the individuals, since the benefits derived from their membership are helpful in preparing them

for higher paying positions on the railroad.

We do not contemplate any change in our policy at this time.

#### Sincere member pays own dues

By T. F. BURRIS  
Chief Engineer—System  
Chesapeake & Ohio  
Huntington, W. Va.

I presume your reason for writing me as well as perhaps several others, is that this question is one which each railroad has recurring quite frequently and one which must be answered.

Some years ago, the C&O began the practice of paying for such dues and expenses and in two years' time the practice had to be rescinded. It is my personal belief that any man in railroad work who is sincere about his profession and who desires to progress, will become a member of one or more of these organizations, paying his own initiation fee and annual dues, because he feels that it will better fit him to perform his work and will make him better fitted for advancement when the opportunities present themselves.

A member of one of these organizations who pays his own way is more apt to be an active organization member, taking part in committee activities and in general making the organization better, and, in so doing,

making himself professionally better.

If the industry pays the initial and annual membership fees of any one who desires to belong, I am fearful that the organization would get cluttered up with parasites who, because their way has been paid, coast along doing nothing and enjoying all of the benefits which can be reaped without the expenditure of any energy.

After many years, our company has adopted what I consider to be a very fair policy. The company makes no restrictions on the organizations which their employees may choose to join. The company does not pay their initiation fee or annual dues in any of these organizations. In the case of the AREA, Roadmasters' and B&B associations, our company allows a reasonable percentage of our employees to attend their annual conventions, and then only if they are an active member of some committee. Under these circumstances, reasonable expenses are paid by the company.

I have sensed in the last few years a growing tendency of too much partying at AREA and Roadmasters' and B&B conventions. This has not reached the point where it is obnoxious and a certain amount of good can be derived from such activities, but I feel that a trend should be started to curb partying to the point where it will certainly not grow in magnitude.

---

## Operating tampers in tandem

When working two production tampers in tandem, is it better to have the machines fully tamp alternate ties or have each machine partially tamp every tie? Explain.

#### Tamp alternate ties

By W. W. CHAFFEE  
General Track Supervisor  
New York, New Haven & Hartford  
New Haven, Conn.

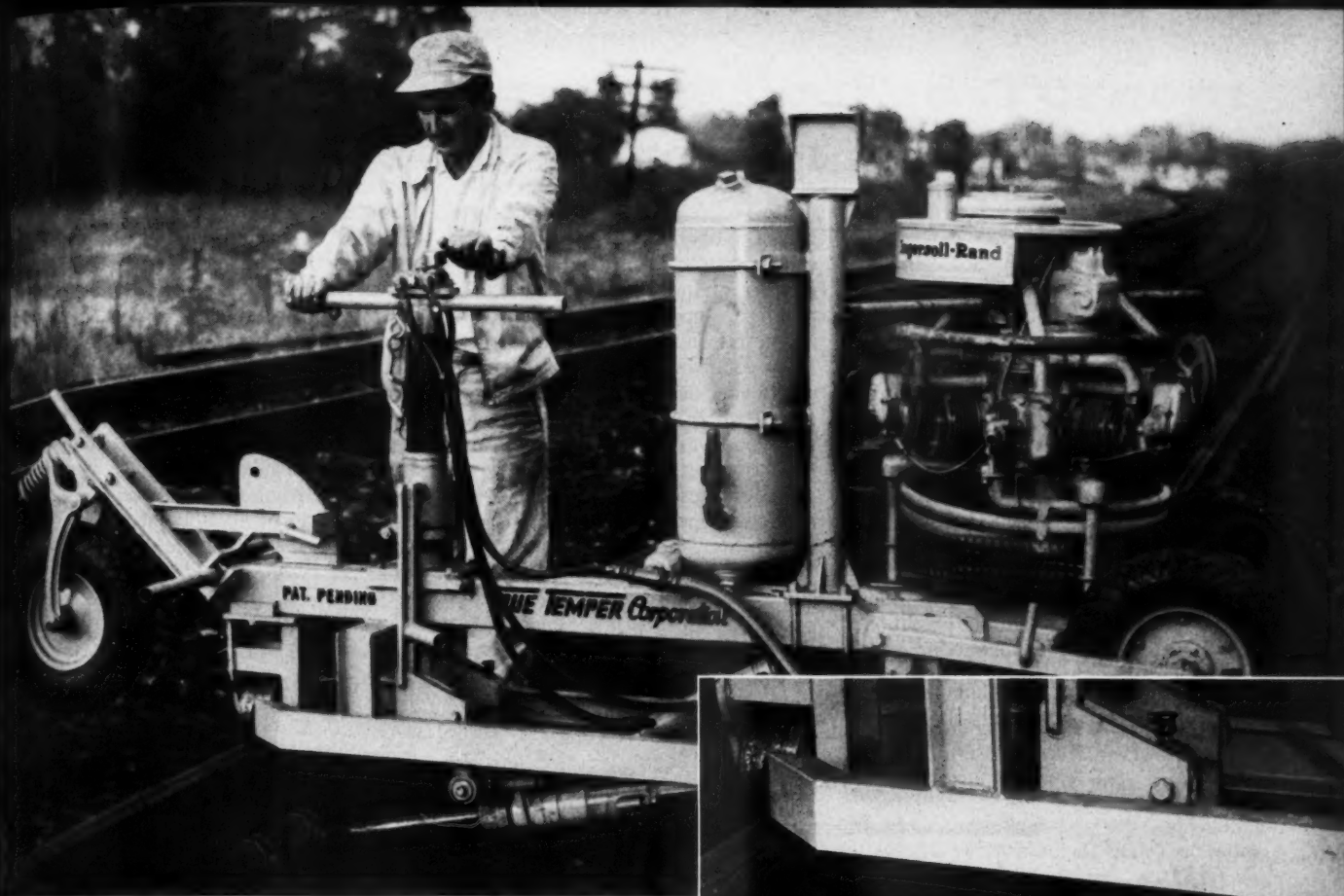
The nature of the program, i.e., whether it is a reballasting job with a 5-in or 6-in track raise or a surfacing and smoothing-up raise which will require about a 1-in to 1½-in raise, will determine what type tamper you will use. In either case there is definitely more production at less cost by using two tampers in tandem each fully tamping

alternate ties. However, the two machines should be spaced far enough apart so that the type of tamper being used will not affect the track surface due to the vibrating action that some tampers depend upon to solidly tamp ties.

#### Two schools of thought

By ASSISTANT ENGINEER

There are two schools of thought on this subject, and I have seen tandem-worked production tampers em-



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### **What's the answer? (cont'd)**

ployed with each method. In answering this question, however, I am assuming that both tampers are of the same manufacture and are using the same number and size of tamping tools.

The proponents for having each tamper make a certain number of insertions on each tie claim that each operator tamps differently from any other. Hence, if each operator was to work on alternate ties, the adjacent ties would end up by not being tamped to the same degree, resulting in a hard-and-soft riding condition. But, they state, by having one operator do the final tamping on all ties, a uniform compaction will be obtained with better riding qualities.

However, I do not ascribe to this theory. The inherent characteristic

of the production tamper is its ability to produce uniformity of tamping. The operators of each machine can be instructed to make the same number of insertions or to lift the tools to approximately the same height to result in the same uniformity of compaction. There is no reason to vary the number of insertions except where the ballast is particularly loose, as when making a high lift.

The purpose of working two production tampers in tandem is to increase production. Greater production is obtained by having the machines make fewer stops by working on alternate ties, as it takes less time to move the machine twice as far than it does to make twice as many stops. And, there is no sacrifice in riding qualities because no discernible difference can be determined when riding over the completed track.

of water necessary for efficient discharge from hose nozzles and sprinkler heads. The fire pump should be a dual drive type, powered by an electric motor with an auxiliary steam turbine, gasoline or diesel engine. The pump should be housed in a separate fireproof structure far enough away from buildings so that its operation would in no way be impaired by a fire. Electric power should be installed direct to the pumphouse from an outside source.

A flexible means of increasing pressure to a railroad plant or terminal fire system would be the use of fire hose for bypassing water from municipal mains through a mobile fire pumper. A check valve located in the system past the municipal water mains would confine the increased pressure. Where fire hydrants are not accessible or available for hose attachments, connections may be made directly to lines by means of hose valves placed conveniently about the plant or terminal.

Trained personnel is of vital importance in fire fighting. Periodic fire drills should be held throughout the year and selected personnel should have a thorough knowledge of equipment necessary to operate or use during a fire.

---

## **Water supply for fire protection**

In cases where water supplies for railroad shop and terminal areas are obtained from municipal sources what equipment should a railroad provide to assure itself of an adequate supply of water, at the necessary pressure, for fire-protection purposes? Explain.

### **Need 6-in fire line**

By J. A. PRUETT  
General Fire Prevention Inspector  
Southern Pacific Lines  
Houston, Texas

To explain the question more information is needed as to what is to be protected, type of fixed properties, size of shops and how many employees are employed on each shift. However, I suggest the following for an average railroad shop and terminal.

An overhead water storage tank of not less than 75,000-gal capacity with 25,000 gal for general shop and terminal use, reserving 50,000 gal for fire protection. The fire-protection water line should not be less than 6 in. in diameter and fire plugs should be spaced so as to have complete coverage of all buildings, using 1½-in fire hose with fog nozzles.

A booster pump should be supplied of not less than 500 gpm capacity, at a pressure of 100 psi, taking suction from the 50,000-gal

reserve and discharging into the fire main.

If diesel units are to be protected, a very high pressure pump of not less than 35 gpm at 800 psi, using fog nozzles, is recommended in addition to the above mentioned fire protection.

### **Booster pump essential**

By A. W. CRUIKSHANK  
Plumbing and Heating Supervisor  
Delaware & Hudson  
Albany, N. Y.

Many large railroad shop plants and terminals that have water mains connected to a municipal water supply need additional equipment for effective fire-fighting purposes.

A special, approved centrifugal fire pump is generally used as a booster pump in situations where there is no deficiency in volume of water available but the pressure is inadequate to supply the quantity

### **Municipal protection often best**

By R. P. HAMILTON  
Superintendent Safety  
St. Louis - San Francisco  
St. Louis, Mo.

The first consideration, I think, should be the water supply available from the municipal source. If the municipality has a limited supply, small water mains, and poor distributing system, then there is not much use in providing large water mains, pumps, etc., to try to improve this condition. Of course, a storage tank of sufficient capacity could be provided but there is no assurance that adequate water will be made available to maintain a suitable level in the storage tank.

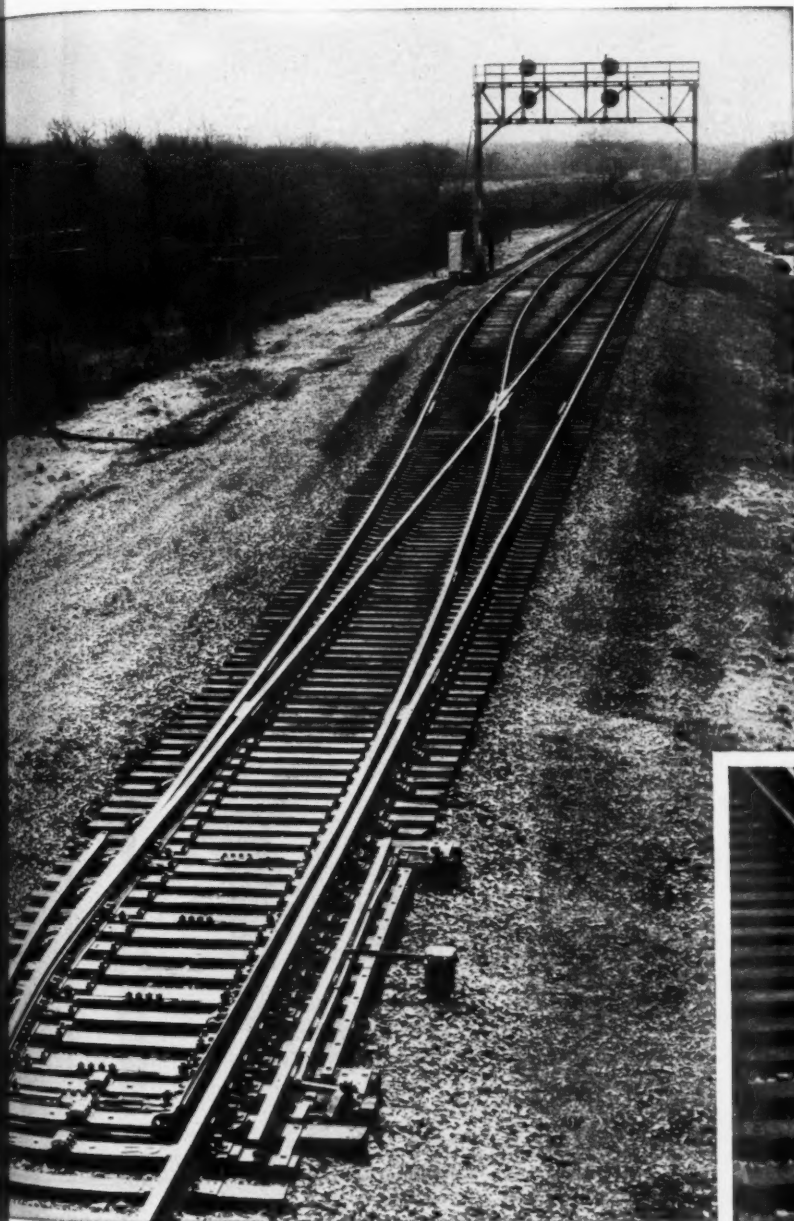
In general, on our property, we depend on the municipal source of water supply. We provide water lines throughout the property of not less than 6-in diameter. Where pos-

*(Continued on page 56)*

# USS Heavy-Duty Interlocked Turnout carries heavy freight traffic at 40 mph on new CTC installations

Bessemer and Lake Erie's new CTC installation from Albion to North Bessemer, Pa., (125 miles) carries heavy freight—and lots of it. Day-in day-out, around the clock, long trains carrying coal and ore whistle by at 40 miles an hour. Punishing traffic like this calls for the best in trackwork, especially frogs and switches.

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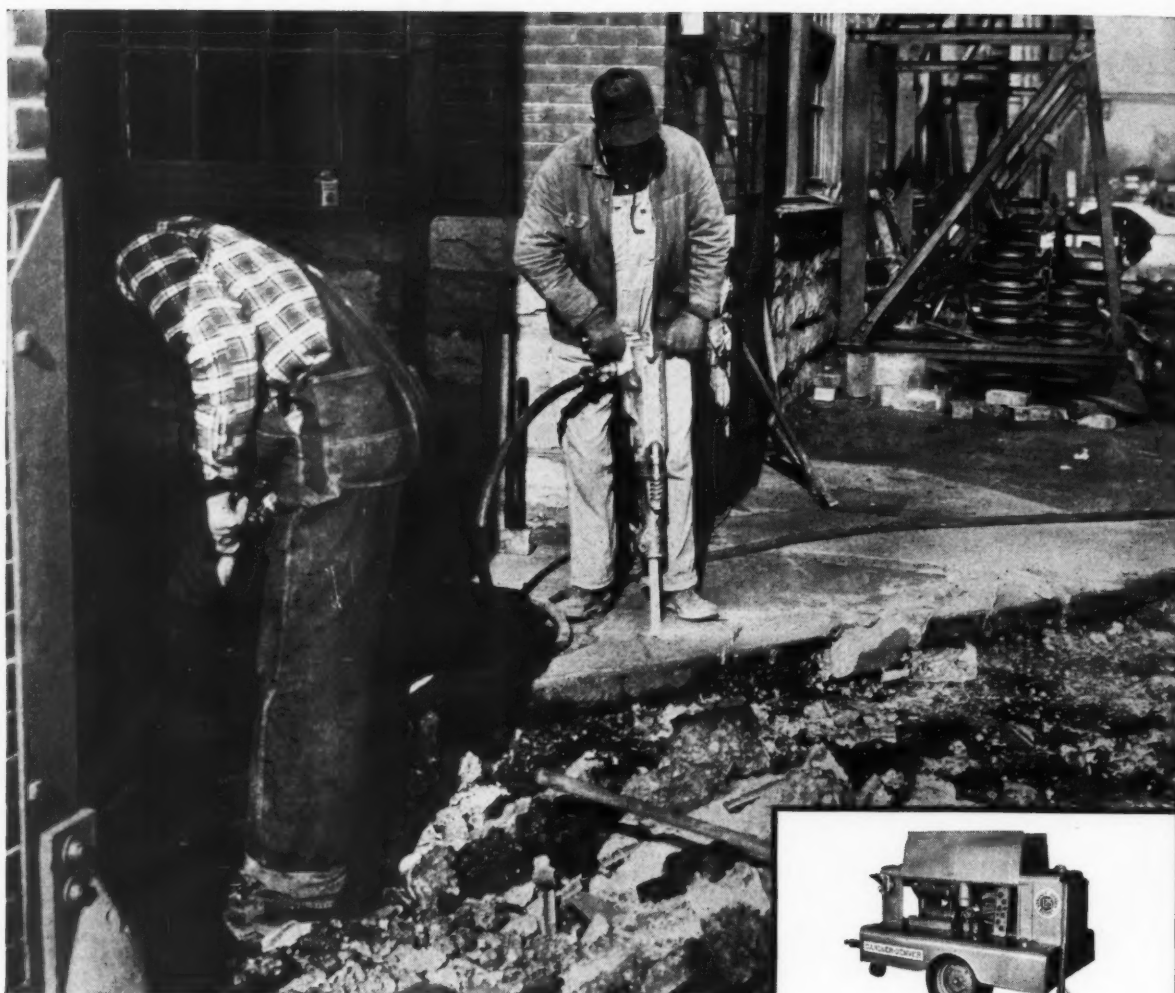
The 39-foot-long Samson-type switch points are doubly reinforced, insulated, heat-treated and have special plating. Rail braces are USS TAYLOR\* adjustable braces. The Rail Section is USS 14031 (140%A.R.E.A.).



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*\*UNION T-20 and T-21 Switch Stands are identical except the T-21 includes a built-in target drive assembly.*



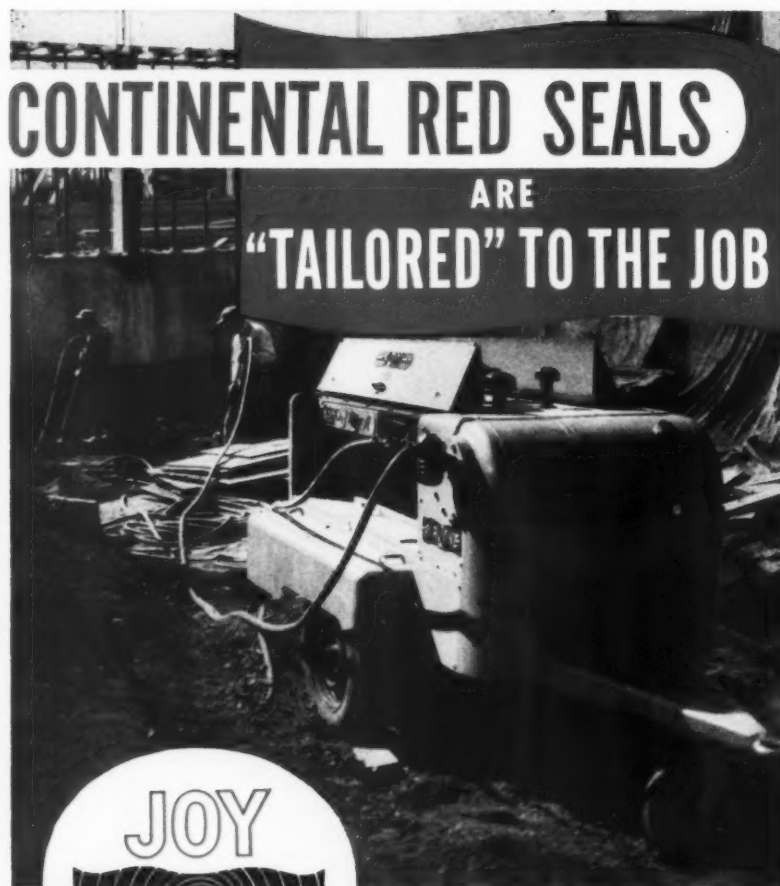
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### What's the answer? (cont'd)

sible we provide larger water lines. We have found that if we can provide as large a water line as the source of supply will permit, extend the large water line through the property as far as necessary and then use not less than a 6-in water line throughout the balance of the property, we are assured of a good supply of water.

We are primarily concerned with the quantity of water available rather than pressure because we can boost the water pressure through pumps if we have the water available. Our first concern after a check of the initial supply is the residual pressure we will have with a determined number of fire hydrants open. Tests made of the supply will indicate whether there is going to be sufficient water available with a given number of hydrants opened. We make use of a gauge and pitot tube to ascertain what water supply we have available.

First, we determine what our water supply is. Then, if we do not have adequate pressure to provide the necessary number of fire streams in order to put a stream or streams of water on top of the highest structure in our property, we consider the installation of a water pump. We have depended on electrically powered centrifugal fire pumps of whatever capacity necessary to provide the number of fire streams we should have to adequately protect the property. If the study indicates we need two streams to accomplish this, then perhaps a 500-gpm fire pump capable of developing 100 psi at the pump will be ample or, if more than two fire streams are necessary to accomplish extinguishment of the fire, a larger capacity fire pump would be provided to give more fire streams at 100 psi at the pump.

This is the only equipment we make available for fire protection outside of providing ample fire hose, nozzles, axes, etc., to be used to fight fires. Our hose reel carts are so located that they are not subject to loss from fire in other property, yet are accessible to our employee personnel so they can readily make use of the equipment when needed.

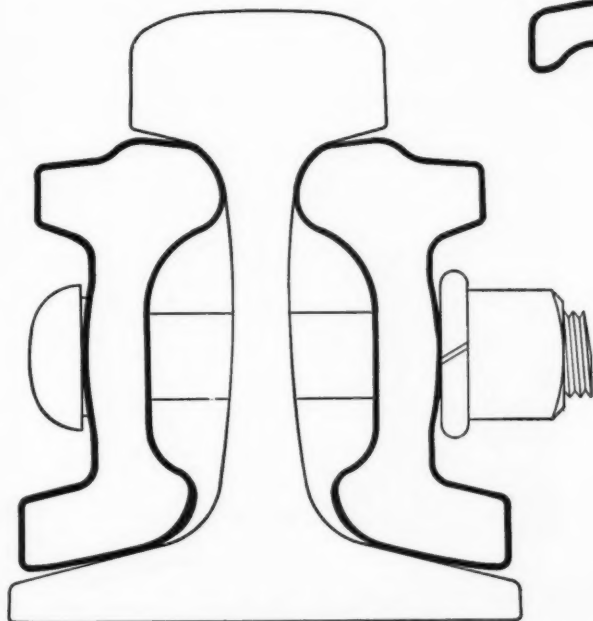
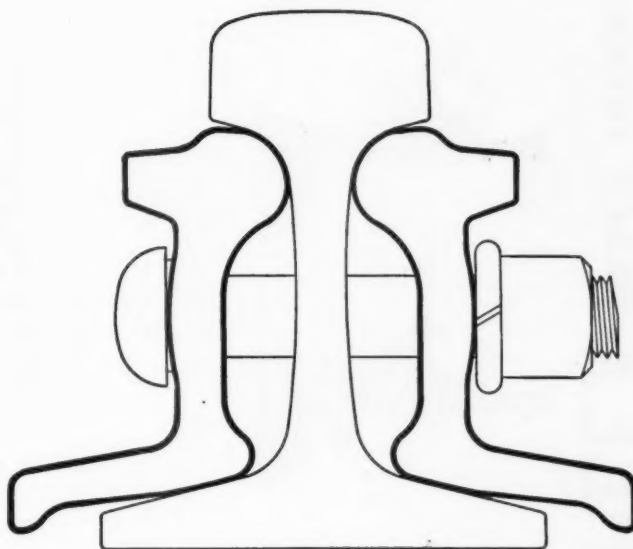
The fire protection picture has  
(Continued on page 60)

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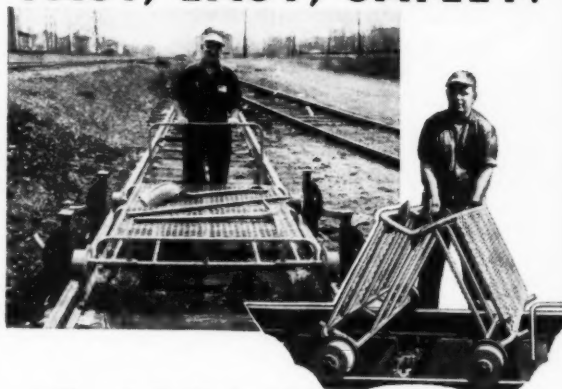
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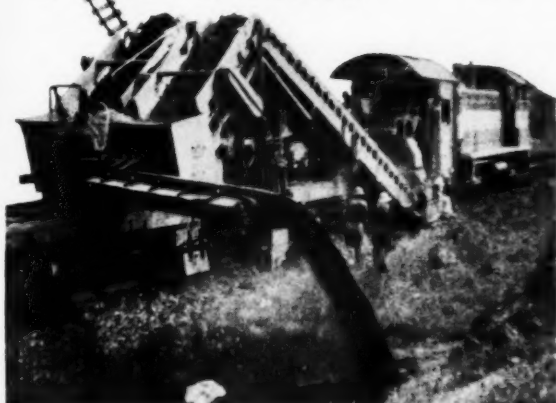
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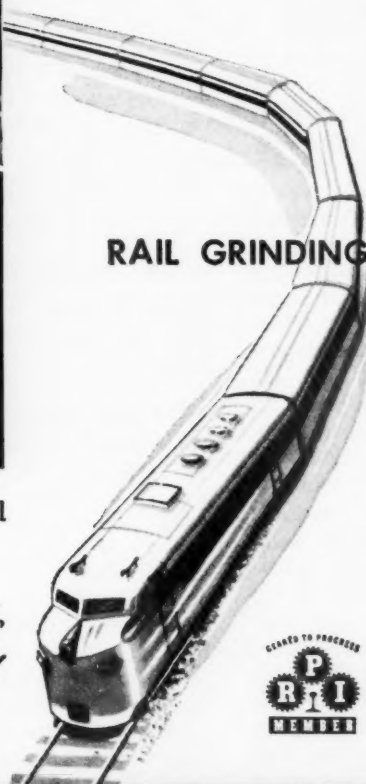
## REPORT OF A DECADE OF PROGRESS

1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
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## What's the answer? (cont'd)

changed rather rapidly during the past few years. Where it was the practice a number of years ago for railroads to provide their own fire protection equipment and personnel today more and more reliance is being placed on the municipal fire departments for the reason that the municipal fire forces are specifically trained in fire fighting and can keep down the fire loss better than the railroad trained personnel who at best drill and train only periodically. In addition, much of the railroad property which formerly was located outside the corporate limits of municipalities is now located inside such properties. The railroads are taxed the same as any other industry, and, as citizens of the community, are entitled to fire protection from the municipality.

Where dependence is placed on the municipal water supply and municipal fire forces for fire protection, consideration should be given toward standardizing the fire hydrants with those of the municipality so that they can make ready use of the hydrants without the necessity of using adapters with which to hook up fire hose. This is particularly true with respect to the steamer or pumper connection of the fire hydrant. Fire forces normally depend on their pumper truck to deliver the water pressure they want to attack the fire, so they hook up their pumper truck and draft the water necessary to provide the number of fire streams they want with the amount of pressure they want on each stream. This is the reason municipal water supplies should provide ample residual pressure to take care of the additional streams required.

Where proper study is conducted and care used in testing the available supply of water, there need be no fear of relying on municipal water supplies for fire-protection purposes. Very often no special equipment will be required because ample water and pressure will be made available to the railroad for adequate fire protection purposes. But, if this is not true, then the use of the municipal fire department often relieves the railroad of the necessity of providing special equipment.

## Insulating-type window glass

Is the greater initial cost of installing insulating type window glass economically justified in railway buildings on the basis of winter fuel savings? What types of buildings can make the most efficient use of such material? Explain.

### Not needed in South

By S. G. URBAN  
Architect  
Texas & Pacific  
Dallas, Tex.

The matter of insulating-type window glass has not received our consideration beyond an initial opinion. In the geographical area we serve our winters are relatively mild and short and fuel saving by this means would be small compared to northern climates. Extra cost of double glazing would not be justified on the basis of just fuel saving in our buildings. Nor does the extra cost appear to justify installation to reduce the air conditioning loads we experience.

This type of window installation, particularly for large areas of glass, provides some additional comfort to the occupants from thermal radiation. This would also be more common to colder climates than ours. We have no installations of this type in our buildings. As stated above, we have not given this matter more than cursory consideration.

### Usually prefer storm sash

By S. E. KVENBERG  
Supervisor Building Maintenance  
Milwaukee Road  
Chicago

On many structures we can justify, solely through savings in heating fuel, the installation of ordinary storm sash and, in some instances, even self-storing combination storm and screen sash. However, only under very unusual circumstances could double-glazed or insulating-type windows be justified entirely on this basis.

Our use of this type of glazing, to date, has been confined to hump classification yard control towers. This double glazing remains frost and moisture-free at all times, which, of course, is absolutely essential from the standpoint of visibility, and I would say this is the primary reason

for its use. In addition, this type of glazing does cut down considerably heat transmission during the hot summer months and also results in a saving in fuel and more comfortable temperatures during cold winter months, all of which, of course, is extremely desirable in these busy control towers.

### Depends upon building

By P. R. CICCILLI  
Supervisor of Buildings  
Central RR of New Jersey  
Jersey City, N. J.

In certain structures, such as shop buildings, roundhouses, powerhouses, etc., the use of insulating-type window glass would be uneconomical—not only from the viewpoint of the greater initial cost of installing, but more so from the large percentage of breakage, causing frequent replacement. In these aforementioned structures greater heat losses than those caused by glass area are caused by infiltration, frequent door openings, exhaust units and by existing louvers in the monitors.

Buildings that can make most efficient use of insulating-type window glass are yard towers and yard offices, where large glass areas are required for observing operations.

In installations where insulating-glass has been used, we found that in a number of cases the reduction in installed radiation permitted the use of one tier of wall fin convactor along the base of the glass area. This was sufficient to create a heat screen between the operator and the glass area and, at the same time, giving him a maximum unobstructed view of the operations. Where such glass installation was not made, an additional tier of fin convactor was a cause of complaint—as an obstruction to a full view of the full operations.

Though nothing is stated in the question as to the use of plastics for  
(Continued on page 64)





**For Faster — Better Tamping  
at LOWER COST in '58 ...**

## You need the 1958 **NORDBERG GANG TAMPER**

Look under your ties . . . what kind of ballast pattern are you now getting? With the improved *Nordberg Gang Tamper*, you can be sure of getting the best possible ballast pattern . . . under every tie, every time, in any ballast. What's more, the 1958 Gang Tamper will give you not only *quality* tamping, but will do the job *faster*, and at *lower cost*.

With the proved Nordberg method of impact and vibration, and with properly distributed ballast, the Gang Tamper can tamp 600 ft. per hour and do a compacting job second to none.

Important, too, is the fact that the Nordberg machine is light in weight—which means fast starting and stopping at every tie, speed of travel to the job, and speed and safety in setting off the track.

Check all the outstanding advantages of the Nordberg Gang Tamper, and you'll see why this improved "Mechanical Muscle"® is your logical choice for high production, quality tamping in raising and spot surfacing.

Write for literature.

### IMPORTANT ADVANTAGES

- Simple, positive manual controls.
- Split heads for tamping either side.
- Power driven lift on set-off wheels (set-off time, 2 to 5 minutes).
- Light weight—easy to handle.
- Travel speed up to 20 mph—plus extra low speed for accurate tie-to-tie operation.
- Adjustable for high or low vibration, plus hard or soft impact to meet all ballast conditions.
- Can be furnished with insulated wheels.
- Emergency hydraulic hand pump for operating set-off rails or raising vibrating heads in case of engine failure.



**NORDBERG**  
*Mechanical Muscle*®



**NORDBERG MFG. CO.**  
Milwaukee 1, Wis.

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R1157



**MANNIX Sled** is unloaded beside track and is introduced beneath track by jacking up rails and ties and pushing sled under with a bulldozer.

## New Cost-Saving Operation through use of HYDRAULIC CONTROLS

**LATEST MANNIX Ballast Sled** in use on the Rock Island railroad features a new factor which eliminates the piling up or bunching together of ties. The hydraulic controls give the operator a means of adjusting the leveling device to completely overcome the improper leveling of the old tie bed.



Phone: WALnut 7-9411  
4020 Minnetonka Boulevard, Minneapolis 16, Minnesota



**TRACK** is lowered onto sled which is then coupled by cables to a locomotive.



**HYDRAULIC PUMP** is operated by one trackman while sled is in motion, for adjusting the tilt of the rear scraper blades.



**SCRAPER BLADES** are adjusted by hydraulic rams (one on each flap) for controlling digging action. Blade extensions were applied for widening roadbed.

# now, in rail tools, too, if it's Remington, it's right!

save time and  
money with  
**ONE** power unit

FOR SURFACE GRINDING • FROG GRINDING  
• RAIL SLOTTING • SWITCH POINT  
GRINDING • CROSS GRINDING • WIRE  
BRUSHING • BOLT HOLE DRILLING



*Combination Rail Grinding Model 23 has  
7 great features that make it right for you!*

- Powerful gasoline engine develops 8½ hp.
- Wheels insulated against interference with signal systems.
- Outriggers available to fit any gauge track.

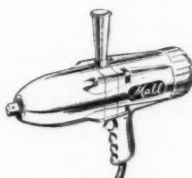
- Entire unit rolls easily on track, allows machine to follow operator.
- Wheelbarrow mounting with pneumatic tire for easy mobility; can be moved off track by one man.
- Patented ball slip-lock connection for quick change of attachment.
- Pull-on crank starter for fast, kick-free starts in any weather.

**MODEL 23 Rail Grinder.** Single-cylinder, 4 cycle, air-cooled gasoline engine. Horsepower ratings—6½ hp. at 2200 rpm.; 7¾ hp. at 2700 rpm.; 8¾ hp. at 3200 rpm. Welded tubular steel frame, 20" x 4" pneumatic wheel. L. 83", W. 30½", H. 34" 190 lbs. Includes outrigger, ¾" x 10' flexible shaft, 10' flexible shaft housing.

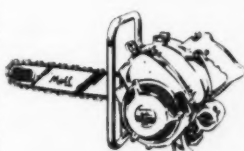
## Remington

*Mall*®

**MALL TOOL COMPANY**  
Division of Remington Arms Company, Inc.  
Bridgeport 2, Connecticut



½" impact wrench specially  
designed for railway work.



Gasoline, electric and pneumatic  
chain saws for every requirement.

*Specifications subject to change without notice.*

## Now! Cut maintenance costs!

Here is one of the most powerful, most versatile railroad maintenance machines ever designed! It is the product of 30 years' experience. Designed to cut maintenance costs, it has been tested and proved on America's leading railroads.

This famous Combination Rail Grinder, Model 23, is produced with the same quality and precision that have made Remington—the newest name in power tools—famous for 141 years in sporting firearms and ammunition. This Rail Grinder makes it possible for one man to do a wide variety of jobs with no time-consuming conversions necessary, because our patented ball slip-lock connection enables the operator to change attachments instantly. No threading to bother with.

For complete information about Remington's specialized Mall railroad tools, just send the convenient coupon below.

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Please send me your **FREE** railroad tool catalog.

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## What's the answer? (cont'd)

glazing, we are resorting to their use in the replacement of glass more and more as time goes by. Their heat coefficient (which varies from  $\frac{1}{2}$  and more than that of glass) and resistant to breakage are the reasons for substitution.

### Savings determined by study

By JOS. A. JORLETT  
Engineer Structures  
Pennsylvania  
Baltimore, Md.

Winter fuel savings in railway buildings having insulating-type window glass as an item offsetting the larger initial cost may be determined from many factors, such as the number of degree days when outside temperature is below the inside temperature, the orientation of the building to the path of the sun as it strikes the glazed surfaces, the velocity of the wind, the ratio of window areas and other openings, the heat loss or gain through wall areas, the total gross cost of the Btu's delivered to the rooms and the labor costs used to erect, remove and store storm windows if they are used.

The heat loss or gain through window glass is seen from the conductivity coefficients which follow:

Single thickness glass	1.14
Double thickness glass ( $\frac{1}{8}$ in)	.63
Two lights of glass ( $\frac{1}{8}$ in thick) with one air space between	.57
Two lights of glass ( $\frac{1}{4}$ in thick) with one air space between	.45
(Inside air temperature 70 deg F—still air, outside temperature 0 deg F and 15 mph wind velocity)	

Condensation or fogging of windows will occur in winter in most parts of the United States when single glass is used and indoor relative humidity is maintained within a desirable range. Properly installed double-glazed windows will practically eliminate the likelihood of condensation and cut the heat loss by half on the average.

Larger window units can be installed when the insulating-type window is used than where the remov-

able storm window application is made. When cleaning is necessary only two surfaces are required to be cleaned. The insulating-type window can be of two classes: One, where the two glass lights are fused together at their perimeters and a blanket of dry air or inert gas sealed within; and the other where the two lights are hermetically sealed to a metal strip or set in an extrusion with a blanket of dry air or inert gas sealed within.

Since the window units are all factory sealed and the sizes cannot be altered in the field it is most likely that the units will be found only in newly designed and constructed railway buildings. Because of their size the daylighting usefulness appeals to the architect as well as the owner. They can be made to admit, exclude, or modulate the light in useful and stimulating ways. Special glass can be employed for reduction of glare and solar energy transmission, for diffusion of light and for decoration, or for resistance to thermal shock. Structures such as stations, offices, and yard, scale and other buildings where occupants demand a broad range of sight distance such as is found in most of the new freight classification yards are examples where these windows are most adaptable.

Although the question speaks only of winter fuel savings, another saving

will be readily discernible where buildings are air conditioned. The heat transfer from the outside to the chilled interiors is reduced by the use of insulating-type windows.

When designing openings for insulating-type windows adequate provisions should be made for expansion and contraction due to changes of temperature and barometric pressure. The units cannot be forced into place. They should be set in an approved cushioning material. Obviously, the building should be constructed so no settlement can occur. Extreme care must be taken that no infiltration of air takes place either at the window edges or in the wall construction. Loss of heat through infiltration depends on air velocity, varying as a power of the wind velocity. It is likely that the walls of any building using insulated-type windows will be insulated or constructed with a dead air space between the components of the wall.

Where insulating-type windows are used they should never be covered with paper or have certain areas of the glass painted. This will act as a heat trap and cause the lights to crack. Most manufacturers of such windows will guarantee the windows for five years against material obstruction of vision as a result of dust or film formation on the inner glass surfaces.

---

## Breaking ice jams at bridges

What is the most effective means of breaking up ice jams at bridges? What precautions must be observed? Explain.

### Blast carefully

By E. A. PANUSHKA  
B&B Supervisor  
Northern Pacific  
Fargo, N. D.

Ice gorging at a bridge, in most cases, is due to the piers or bents of a bridge obstructing the free flow of ice. When ice is flowing heavy a great deal can be done to prevent an ice gorge by having men stationed on the bridge equipped with pike poles to dislodge cakes of ice when they form behind a bent or pier. However, after a gorge has formed and one is unable to move the cakes of ice with a pike pole, about the

only way to break it up is with dynamite.

I have found that a 60 per cent dynamite charge is about the best to use on ice and, on the average gorge, four sticks to a charge seem to work out the most satisfactorily. If the gorge is safe to walk out on, the charge should be placed by cutting a hole 8 to 12 in deep and placing the charge and covering it with wet chipped ice, or placing it in a cavity under water. Make sure it is anchored so it can not move away when placed. The charge should not be placed too close to a bent or thrown

(Continued on page 68)

After flood damage on an Eastern line, 7 Koehring RailAids salvaged freight, speeded track clean-up and repairs to re-establish main-line service. Where track was blocked, the RailAids detoured along high ground — traveled, worked off-car.



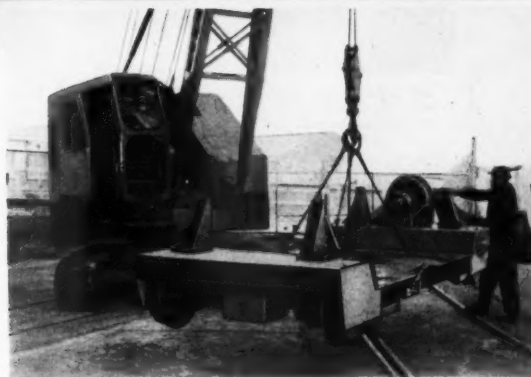
## ON-TRACK ... OFF-TRACK in less than 10 minutes

Wherever there's excavating, lifting, or material-handling to be done, Koehring RailAid takes to the rails — travels on-track from one work-section to the next at speeds up to 20 m.p.h. It's self-propelled, powers its own rail car — does 2 to 3 times the work of other excavators or cranes that have to crawl or be hauled from job to job.

At the same time, you get full flexibility for working on or off-track. Koehring 205 loads or unloads itself on ramp-equipped car — sets car on or off-track. Entire operation takes less than 10 minutes!

As a crane, this Koehring 205 safely lifts 6.9 tons from the car — 8.9 tons on ground. Converts to clamshell, dragline, 1/2-yard shovel or hoe — cleans ditches, widens banks, stockpiles coal or ballast, loads or unloads cars, repairs trestles, lays rails, does pile-driving. Want all the facts? Send coupon today.

KOEHRING DIVISION of Koehring Company



Crane or excavator sets the rail car on or off-track, clears the right-of-way for through traffic. Ramp-equipped propulsion car has 2-axle-drive, with air brakes on all 4 standard-flange wheels. Car-well accommodates 16, 20 or 24-in. crawlers on the Koehring heavy-duty 205. Torque converter gives smooth, positive control of rail travel speeds from 0 to 20 m.p.h.



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Milwaukee 16, Wis.

Send for free bulletin on Koehring 205 RailAid

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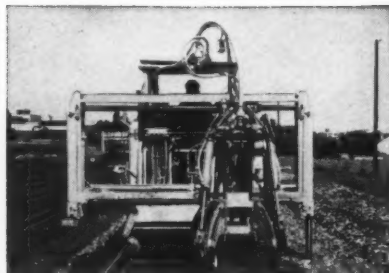
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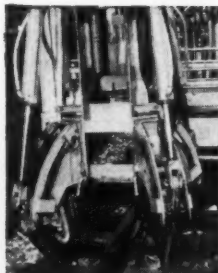
RailAid

# Now Big-Tamper

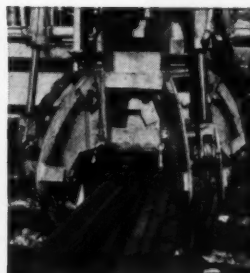
from a SPOT TAMPER



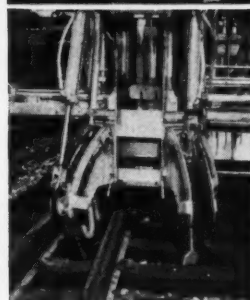
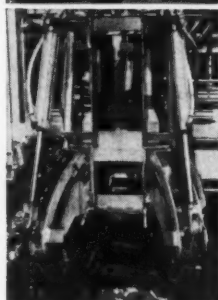
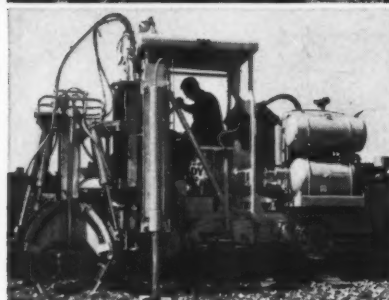
Spot Tamper clamps to rail, either or both lifting cylinders raise track desired amount. Cycle for tamping both ends of tie is about 35 seconds.



At each rail machine tamps at out-board and inboard positions, tamping tools extending under the rail.



Machine will tamp 75% of a turnout. With manifold provided for tamping balance with hand guns.



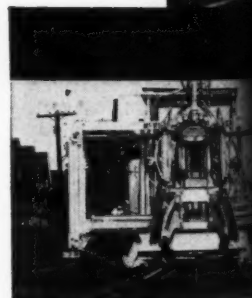
McWILLIAMS

# SPOT TAMPER

Equipped with jacks, a new standard of economy for smoothing, spot surfacing, and yard and terminal maintenance. Machine provides tamping quality equivalent to the McWilliams Multiple Tie Tamper. Ask for Bulletin ST-200.

## Railway Maintenance Corporation

PITTSBURGH 30, PA.



Raised on hydraulic spud, machine is for setting-off or changing direction.



# Ballast Compaction

AMP



## AN IMPROVED SET-OFF SYSTEM



Machine in  
ing direction.

CTURES



M.C. Demountable Set-Off, any piece can be  
ed by one man.



Machine part way out set-off under its own power.



In the clear.

RAILWAY TRACK and STRUCTURES

DECEMBER, 1957

67

# •HYKIL• Spraying Equipment



Successful, long-lasting control of right-of-way weeds and brush depends largely on efficient application of specialized herbicides — demands the right spraying equipment as well as skilled personnel and correct timing.

The 1958 HYKIL SPRAYER LINE includes:

**R-25** 450-gallon and 600-gallon tank-type sprayer. Covers up to 16 feet at variable widths and rates. For push-car mounting. Easily converts to truck use for "off track" work.

**R-85** high-capacity sprayer. Twin-engine, twin-pump design. Automatic metering and mixing. Exclusive "injector" system for "spot treatments."

**NEW R-150 DE**, finest railway spraying equipment at any price. Uses diesel-electric generator. Push-button control of all electric pumping and metering equipment. Handles up to five different weed-killing chemicals at one time — separately or in combination.

Hykil engineers will gladly survey and analyze your problem, recommend the equipment needed, and give full assistance during installation and initial operation. Hykil spraying equipment can be used in applying any kind of weed killer.

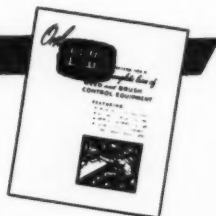
The low initial cost of Hykil equipment is generally REPAID WITHIN 2 YEARS, through improved weed-control results at reduced operating costs.

WRITE FOR DESCRIPTIVE FOLDER

**W. J. Cox Company**  
Effective Weed Control in Any Form

1021 FRUIT STREET  
SANTA ANA, CALIFORNIA

6308 TROOST AVENUE  
KANSAS CITY, MISSOURI



## What's the answer? (cont'd)

in where the current may carry the charge too close to the bridge where it could damage the piling. In some cases it is necessary to blast an opening in the gorge at about the center of the channel and then work toward both sides to ease the pressure against the bridge.

## Prevention is best cure

By B. M. MONAGHAN  
Chief Engineer  
Quebec, North Shore & Labrador  
Seven Islands, Que.

The most effective means we have found of breaking up ice jams at bridges and in front of culvert installations has been to break up the ice using a track crane with bucket or demolition ball attached to smash the ice adjacent to the bridge and keep it moving through in small enough pieces so that it will clear the bridge span. If the jam has formed adjacent to a concrete structure or is not too close to a wooden structure, we have used dynamite to break the ice up and start it moving.

Naturally, it is always preferable not to allow ice jams to occur near track structures but if they do, it is very important to start the ice in water that is not moving too fast to avoid possible damage or removal of the structure. For instance, if blasting is necessary, it should be accomplished by using small charges and removing parts of the ice jam at a time. Where an ice jam is formed adjacent to a wood structure, piling faces and wood areas coming in contact with the ice should be covered with steel protectors to avoid the possibility of the ice cutting the timber.

Preventing the ice from forming jams adjacent to structures can be handled in several ways. As the break-up time approaches, the ice should be cleared away or loosened under the structure and immediately surrounding piles, piers, abutments or other parts of the structure which go down through the ice layer. Jamming frequently is caused by the restraining effect that the ice, which has attached itself to the bridge, has on other ice farther upstream. Hence, if the ice attached to the structure is



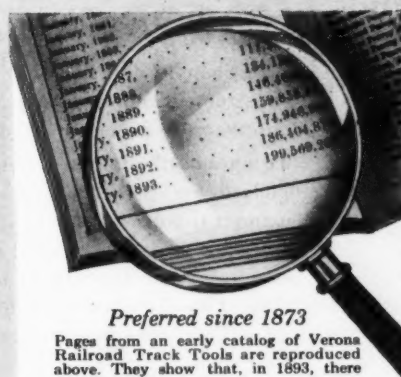
# VERONA SPECIAL VERONALLOY NUT LOCKS...

**Maintain** great bolt tension through a wide reactive range. This is made possible by the non-fatiguing characteristic of Veronalloy Steel.

**Keep** rail joint assemblies in proper condition by maintaining high bolt tension.

**Reduce** angle bar wear and rail batter. Every Veronalloy Nut Lock is heat-treated and tempered, and receives a full compression test before shipment.

**Saves** track maintenance expense by eliminating necessity for periodic tightening of bolts, and joint tamping.



*Preferred since 1873*

Pages from an early catalog of Verona Railroad Track Tools are reproduced above. They show that, in 1893, there were in use—

**199,569,202  
VERONA NUT LOCKS!**



*Woodings-Verona*  
**TOOL WORKS**

Main Office and Plant: **VERONA, PA.** • Sales Offices: **CHICAGO, ST. LOUIS**



### What's the answer? (cont'd)

loosened, this cause is generally removed. Channels under structures should be clear and should be well defined. The water should be forced to flow in channels at a high velocity which in itself will remove a lot of the ice either through erosion or floating.

If ice is unusually heavy or unusually thick, it is sometimes desirable, once the break-up is in progress, to loosen large areas adjacent

to the bridge so that these areas can move out freely without blocking. For this purpose blasting is usually preferred. Charges of explosives varying in weight from 10 to 30 lbs, depending on the size required to break the thickness of ice, and primed with electrical blasting caps, are suspended a few feet below the surface of the ice in the water. These charges should be distributed over the area to be removed and they should all be discharged simultaneously to provide a maximum upheaval of water.

Where ice jams have occurred and it is necessary to blast, it is usually not practical to cut holes down through them but, rather, dynamite sticks should be tied into bundles and floated underneath to the most desirable point for blasting and then discharged. Ice can be blasted by cutting holes in the surface and exploding the dynamite in the ice itself. The efficiency of this method is not nearly as high as when the explosive is placed beneath the bottom surface of the ice.

Recommendations for the best type of powder to be used for this work can be obtained from the various dynamite manufacturing companies. Generally, a powder of 40 per cent grade or less is recommended. The lower the strength, the more suitable is the heaving action obtained from the blast. A recommendation of one company on the use of powder for ice removal is that a powder should be used which will become inert after a relatively short period of immersion in water, thereby providing a safeguard should a misfire occur during ice-removal operations.

On this railway our break-up occurs from south to north over a four-week period. Usually, through the use of a helicopter we cover large sections of rivers adjacent to the right of way near break-up time and have daily progress reports on ice movements. Rivers which show indications of a heavy ice flow are

## Automatic SWITCH POINT LOCK



Switch point—  
Closed position locked

### FOOLPROOF: Gives Safety, Economy!

This Switch Point Lock is a self-contained unit, *ruggedly* constructed and *simple* in design and operation. It is *automatic* in its closing and locking action.

To operate the switch point lock, put foot on lever and push down — then operate switch stand lever in usual manner to throw or open switch. To close switch, operate switch stand lever or pedal in the usual way and the device automatically returns to its normal or locked position. This Automatic Switch Point lock deserves your immediate investigation — as a proved *safety device* for your road.



Write, wire or phone for more information



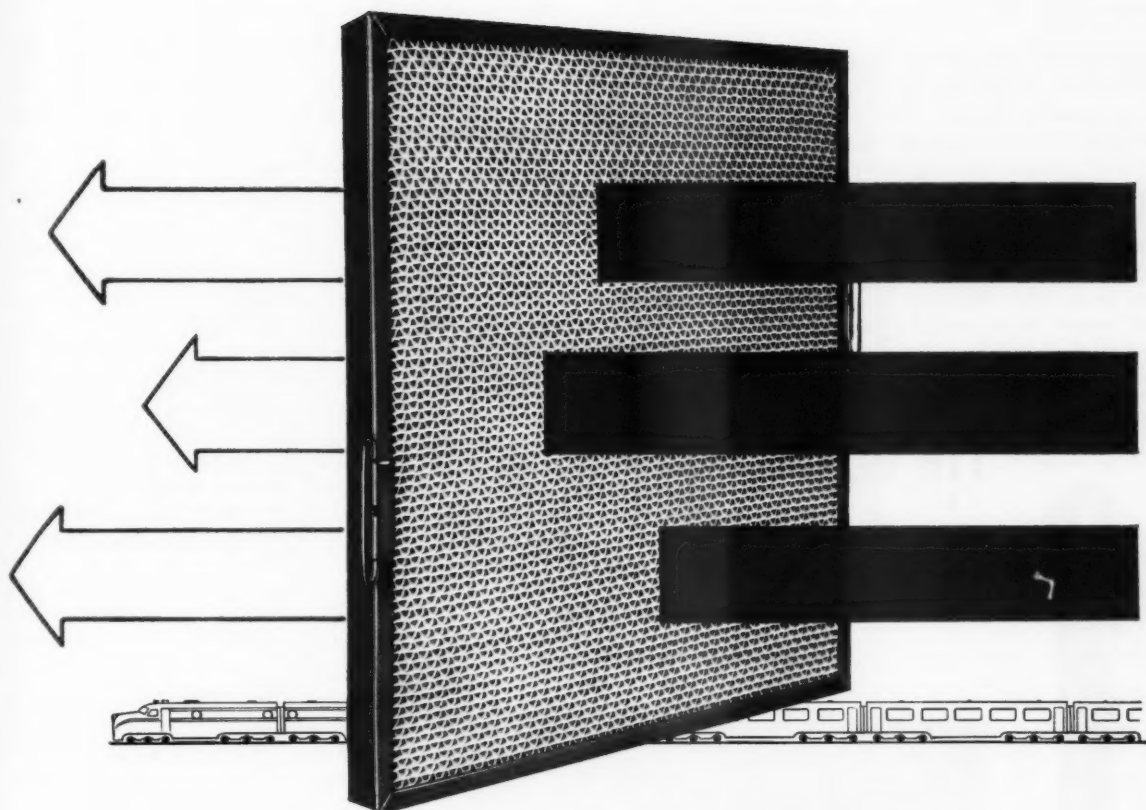
**The RAILS Company**

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"How do you like my imitation of a diesel engine's horn?"

—Erie Railroad Magazine



## Cut maintenance, increase engine life with Esso AIRFIL® Coating Oil

Esso's new AIRFIL Coating Oil for diesel engine air filters has such great dirt pick-up qualities that it can substantially cut maintenance costs and increase engine life. This is possible because of the reduction in abrasive

wear, lessening the need for replacements of engine parts. You, too, can profit from these benefits by using Esso AIRFIL Coating Oil in diesel air intake filters, and in air-conditioning filters.

### Esso AIRFIL COATING OIL offers three important advantages:

- 1. Easy to apply...won't drip off.** In liquid form when hot, it may be applied quickly in the desired quantity, while at normal temperatures, it is a gel-like solid that won't run off.
- 2. Superior wicking qualities** mean a continually fresh surface is presented to the air. Successive layers of dust are rapidly wetted, keeping dirt-retaining efficiency at a maximum.
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Valuable years of experience in research and development, combined with continual testing on the road and in the lab, stand back of the outstanding performance of Esso Railroad products.



## RAILROAD PRODUCTS

For data sheet regarding specifications of AIRFIL Coating Oil, write to Esso Standard Oil Company, Railroad Sales Division, 15 West 51st Street, New York 19, N. Y.

### What's the answer? (cont'd)

watched at the bridge site, and ice, once started, is kept moving as rapidly as possible through the bridge openings. Equipment and supplies are kept near at hand in case of an emergency.

In summary, ice jams can be handled by blasting or by mechanical means. However, it is better to prevent them from occurring. Careful and frequent inspection of rivers and bridges near break-up time usually

provides an adequate picture of what must be done to expedite movement of ice through the structures.

### Dynamite and drop hammer

By W. W. WIKLUND  
Assistant Supervisor B&B  
Great Northern  
Havre, Mont.

We have a series of bridges on a branch line which, in the spring, are bothered with ice jams. Normally the creek beneath these bridges is

quite small, but when the breakup in the spring arrives there is, in depth, from 10 to 30 ft of ice backed against the bridges for up to a mile long. This creek passes under 12 bridges in a short distance. When the ice jams against a bridge, it is sometimes thrown as much as 24 in out of line. We have tried dynamite, and have had best results by placing four or five sticks in a bundle and throwing it in open water above the jam, using a 6-in to 12-in fuse. The current under the jam carries the dynamite along the bottom of the stream and when it goes off—with the water and ice pressure above—it does a good job in shattering the large cakes of ice.

On the other hand, we tried placing the dynamite on the top of the jam at different locations. This had little or no effect, since when the ice is packed against the bridge in a depth of from 10 ft to 30 ft, the charge cannot "blow down" enough to do any good.

We first throw a number of charges under the ice to relieve the pressure at the bridge, being careful to determine (by using one stick in the first charge) how long a fuse is needed to get the charge at the exact desired location and so that it will not come in contact with the bridge. After this we use bundles of up to six sticks and, as the ice starts to move, we use ½-in pipe and pike poles to steer the ice cakes around the piling and through the openings.

Another method we have used utilizes a Burro crane with a drop hammer. When the ice starts to move, and as the large cakes came within reach of the boom radius, we drop the hammer, shattering the cakes. This also was very effective. As one bridge is cleared of a jam, we run with the crane to the next one, doing the same as before. Once the jams are removed, we patrol the track with the Burro crane, keeping the bridges clear of any ice that may be still coming down the creek or channel.

We also have found that, once the main jam is removed at these bridges, we are not bothered with any more ice, as the water recedes and does not have enough force to cause another jam. Ice that does form becomes rotten as it comes to the surface and can be broken very easily.

## TIE PLATE LOCK SPIKES ... GAGE LOCK SPIKES

*Hold Gage—Extend Tie Life  
Reduce Maintenance*



Tie Plate  
Lock Spike



Gage Lock Spikes in Track

TIE PLATE LOCK SPIKES hold tie plates firmly in place on cross-ties and bridge timbers. They are quickly and easily driven or removed with standard track tools. Driven to refusal, the spread shank is compressed by the walls of the hole. Plates are held against movement under spring pressure. Play between spike and hole is eliminated—gage is held and plate cutting is overcome.

The GAGE LOCK SPIKE is a rail spike, as well as a plate fastening, for use on tangent track and light curves where lateral thrust can be overcome with only two spikes at each plate rather than four cut spikes. It possesses the same features and advantages as the Tie Plate Lock Spike. The Gage spike is offset at the tie plate surface to avoid thrust and wear from the edge of the rail base. The use of Gage spikes saves up to 13,000 spikes per mile and potential damage to the tie from spiking and splitting is drastically reduced.



Gage Lock  
Spike

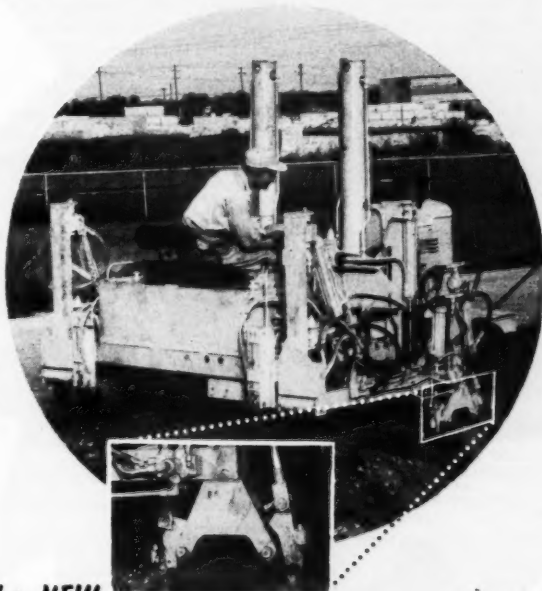
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# Your Best Buy...



**The NEW . . .  
HEAVY DUTY  
Kershaw Ballast Regulator!**



**The NEW . . .  
Kershaw SUPER Jackall!**

Here are two new, improved models of two great Kershaw machines for your 1958 maintenance operations. Both incorporate some 101 additions and improvements to make them outstanding machinery buys on the market today.

For example . . .

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You need them both on your track in 1958!

**Now . . . MORE THAN EVER . . . Recognize  
This Symbol of Leadership!**

**KERSHAW**  
MANUFACTURING CO. INC.  
MONTGOMERY  ALABAMA

## Biographical briefs (cont'd)

(Continued from Page 12)

Western region at Winnipeg—the position he held at the time of his recent promotion.

**Robert J. Fisher**, 36, who was recently promoted to engineer of bridges on the Reading at Philadelphia (*RT&S*, Oct., p. 26), graduated from Lehigh University and joined the Reading in November 1946 as a structural draftsman at Philadelphia. He subsequently served as structural designer and bridge designer until 1956 when he was promoted to assistant to the engineer of bridges. Later that year he was promoted to assistant engineer of bridges at Philadelphia—the position he held at the time of his recent promotion.

**Lester E. Titlow**, 36, who was recently promoted to assistant engineer of bridges on the Reading at Philadelphia (*RT&S*, Oct., p. 26), graduated from Lehigh University and joined the Reading in April 1948 as a structural draftsman. After serving as assistant engineer from August 1950 until January 1956, he was named designing engineer in the latter year, later being named assistant to the engineer of bridges—the position he held at the time of his recent promotion.

**J. Everett Good**, 56, who was recently promoted to assistant chief engineer of the Reading at Philadelphia (*RT&S*, Oct., p. 26), graduated from the University of Michigan and joined the Reading in 1927



**J. Everett Good**  
Reading



**Lester E. Titlow**  
Reading



**Robert J. Fisher**  
Reading



**Howard C. Rutledge**  
Nordberg

as a designer in the bridge department after having served as a steel detailer with the Phoenix Bridge Company for three years. From 1934 until 1946 he served as structural engineer with the Foster Wheeler Corporation, New York, and in the latter year was named assistant engineer of bridges of the Reading. In 1956, he was promoted to engineer of bridges—the position he held at the time of his recent promotion.

**R. C. Weller**, 36, who was recently promoted to division engineer on the Canadian National at Hornepayne, Ont. (*RT&S*, Oct., p. 26), graduated from the University of Toronto and began railroad-ing with the Algoma Central and Hudson Bay in 1947 at Sault Ste. Marie, Ont. In 1953, he was named assistant engineer on the Canadian National at London, Ont., and in 1956 was promoted to assistant division engineer at London.

## Supply Trade News

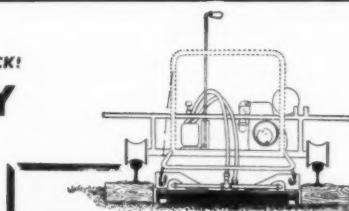
**NORDBERG MFG. CO.**—**Howard C. Rutledge** has been appointed sales manager of the Railway Equipment Division of Nordberg Manufacturing Company at Milwaukee, Wis. Prior to joining Nordberg, Mr. Rutledge served as sales manager in the Chicago territory for the Kershaw Manufacturing Company and was previously general manager of the Royce Kershaw Track Construction Company. Earlier in his career, Mr. Rutledge was employed by the Ford Motor Company, designing and constructing track facilities at many of their plants. He also served as general manager of the Ingall Iron Works at Birmingham, Ala. for five years.

(More on page 76)

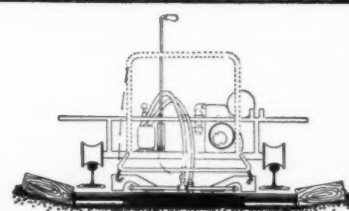
**NO MORE TRENCHING!**  
**NO MORE JACKING UP TRACK!**

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**TIE-REMOVING TEAM**  
**NOW ELIMINATES SLOW,**  
**COSTLY METHOD**

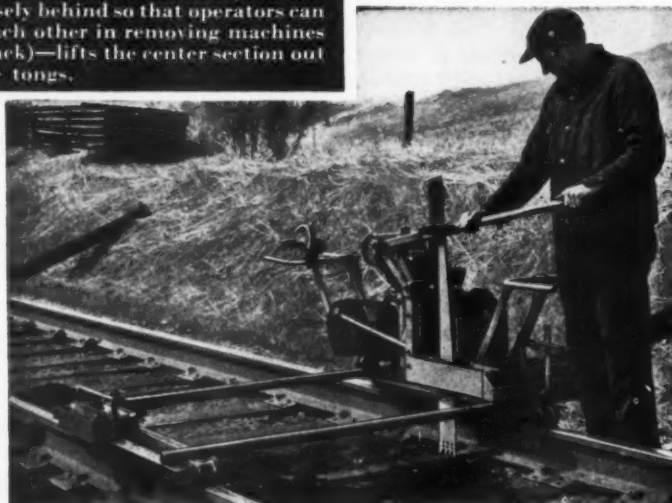
After the tie has been cut on both sides by the WOOLERY Tie Cutter, the operator of the Tie-end Remover—who follows closely behind so that operators can assist each other in removing machines from track)—lifts the center section out with tie tongs.



A double-ended hydraulic cylinder is then lowered into the tie bed. A simple turn of the valve moves these two pistons outward, pushing the tie-ends completely clear of the rail—whether



working with single or double shoulder tie plates! The crib is now open—and only the necessary amount of ballast is removed to admit the new tie.



Use the WOOLERY TIE-END REMOVER in conjunction with the improved model NU WOOLERY TIE CUTTER! It's the perfect team for greater savings on tie renewals—and gives smoother, safer track, too!

For highest efficiency two Tie Cutters should be used ahead of one Tie End Remover.

The trend toward heavier rail and double shoulder tie plates has made removing tie-ends increasingly difficult. With the WOOLERY Tie-end Remover, this task can now be done in less than a minute by one man with no more effort than that required to turn a tie!

**WOOLERY**  
**MACHINE COMPANY**  
2919 Como Ave. S. E., Minneapolis 14

# Sperry



HELPING TO KEEP YOUR RAIL SAFE

## HOW SPERRY RAIL SERVICE FINDS RAIL DEFECTS WHILE THEY ARE STILL SMALL

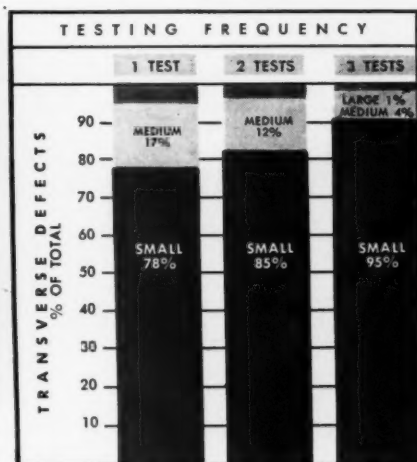


The ability to detect small defects is a realistic yardstick of the effectiveness and value of any rail inspection program. Three basic factors directly affect the detection ratio of small to large defects.

**Equipment** is the first factor, and Sperry Detector Cars are the most advanced rail inspection units yet developed. They are kept so by a continuous research program which has produced improvement after improvement for more than 30 years. That is why Sperry Detector Cars are capable of finding defects of various types such as the detail fracture illustrated.



**Experienced personnel**, the second factor, is vitally important to achieve most effective utilization of inspection equipment. Sperry Detector Car operators are highly trained and experienced in the techniques of rail inspection and the recognition of every kind of defect yet discovered. They are aware, too, of the great responsibilities of their job.



**Frequency of inspection**, the final factor, adds further to the reduction in size of rail defect detected. The chart emphasizes graphically the importance of Sperry testing at regular and frequent intervals.

Maintenance-of-Way Departments know that in finding any kind of defect in rail, "the smaller, the safer" is always true. That is why Sperry Rail testing is an integral part of the safety program of America's foremost railroads.



### SPERRY RAIL SERVICE

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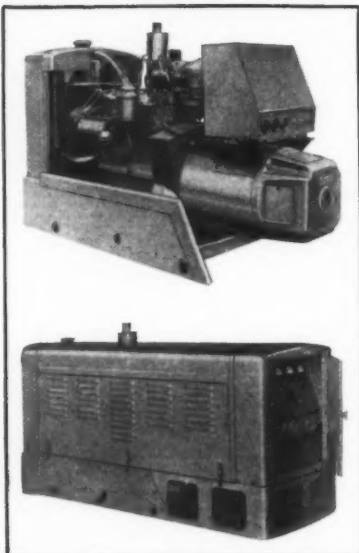
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**NEWS**



## Onan develops new low-cost standby plants

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A new series of water-cooled electric plants makes Onan reliability and advantages available at significantly lower prices. The new units are powered by the same rugged, industrial-type engines used on more expensive plants. They have close inherent voltage regulation, operate on either gas or gasoline, and are equipped with all necessary controls and instruments, and high water temperature cut-off. Standard Onan accessories are available.

The Onan revolving armature, all-weather generator is direct-connected and self-aligning. All standard voltages are available. Both sizes are offered unhusheled or with handsome weatherproof steel housings.

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Minneapolis 14, Minnesota

### Supply trade news (cont'd)

**EVERPURE, INC.**—The Tested Appliance Company, Inc., Chicago, manufacturers of the Everpure line of water purifiers and Everclor automatic chlorinators, has announced the change of the company name to Everpure, Inc. **Robert P. Oliver** has been named sales manager of the firm.

**GILMAN BROTHERS**—The Gilman Brothers Company, Gilman, Conn., has appointed **Silvercote Products, Inc.**, Chicago, as their national sales organization.

**KOPPERS COMPANY**—**W. W. Hanly, Jr.**, has been appointed manager of sales, San Francisco area, for the Wood Preserving Division of the Koppers Company, Inc.

## Association News

### Mississippi Valley Maintenance of Way Club

"Rail Laying Operations on the Chesapeake & Ohio" will be the subject of a talk by **W. M. S. Dunn**, staff engineer to the vice-president, operations of the C&O, before a meeting of the club to be held on December 9. Mr. Dunn will show a color moving picture covering his roads'

rail-laying operations, and will also discuss some of its experimental installations. The meeting will be held at the Hotel Coronado, St. Louis.

### Maintenance of Way Club of Chicago

**T. C. Carroll**, president of the Brotherhood of Maintenance of Way Employees, will be the principal speaker at the next meeting of the club, which will be held on December 16, at the Hamilton Hotel, Chicago. Mr. Carroll will speak on the subject: "Budgeting Maintenance of Way Work in the Railroad Industry."

### Northwest Maintenance of Way Club

The program of the December meeting, to be held on the 19th, will be presented by **L. T. Freed** and **O. D. Stowell, Jr.**, western manager and sales engineer, respectively, of the General Railway Signal Company. Items on the program include the showing of two moving pictures. One, entitled "Electronic Railroad," will illustrate the traffic control system in effect on the Erie division of the New York Central. The other, entitled "Railroading with Radar," will show hump-yard operations on the Southern Pacific at Houston, Tex. The meeting will be held as usual at the Midway Civic Club, St. Paul.

## INCREASE SAFETY OF OPERATIONS BY USE OF Q AND C DERAILS



Install Q and C Derails at clearance points to help guard against interruptions in service on your principal tracks. Hand Throw, Sliding or Portable Types are available, all adjustable for a range of rail sizes, which eliminates waste of adzing or shimming of ties, also reduces inventory.

Specify Q and C Derails for safety, economy and durability.

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UCTURES

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They make a money-saving, time-saving pair ... a Bosch (Germany) Builder's Hammer and a Homelite Carryable Generator. You pick up and set up this gasoline-engine-driven generator anyplace fast. You plug in your easy-to-operate Bosch Hammer and do your chiseling, gouging, or drilling fast. This Homelite 115 volt AC generator delivers full 1500 watts yet weighs only a carryable 90 pounds. Close voltage control and generous overload capacity assure top performance from your power tools, floodlights, and other electric equipment. Other models available up to 5000 watts. How about a free on-the-job demonstration? Simply write, or call your nearest Homelite representative right now.

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Plates, Frog and Switch Materials, Tools, etc.  
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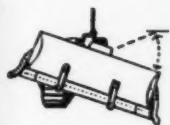
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# NEW! THE CAT\* NO. 7G BULLDOZER



Blade tilts 3' to either side!

Teeth slice through hard materials!



Blade tips through a  $16\frac{1}{2}^\circ$  arc!

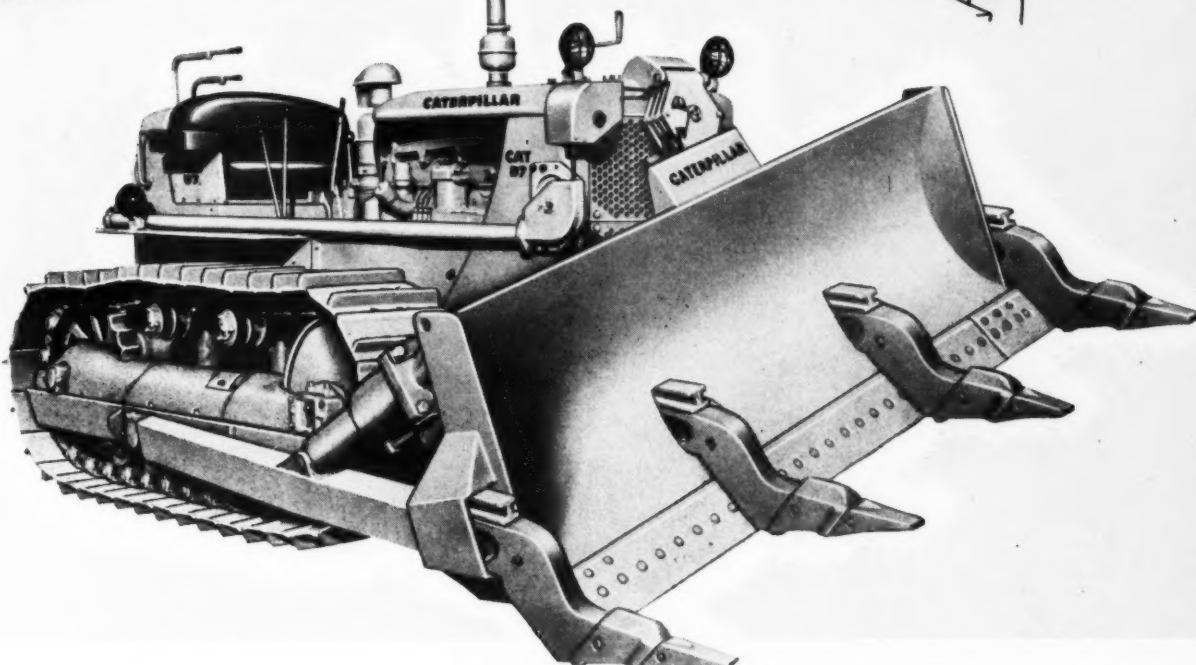


Teeth easily removed!



Teeth pick up and carry!

Handles easily!



## 'DOZER AND RIPPER IN ONE

The brand-new Caterpillar No. 7G Bulldozer is a completely different type of bulldozer. The amazing tilt-tip action, and its four heat-treated cast steel teeth, are an entirely new concept in 'dozing. The Gyrodozer is both a 'dozer and a ripper.

## YOU'LL GET HIGHER PRODUCTION

The Gyrodozer rips through hard or frozen materials. Its 23" teeth not only pry out boulders but pick 'em up and carry 'em away. In rocky soil, the wedging action of the teeth surfaces small rocks for scooping up by the 10' 10" blade. On the really tough jobs, the tractor's full horsepower can be put behind a single tooth. The Gyrodozer is ideal for uprooting trees and clearing an area in a hurry.

## EASY TO OPERATE

A Cat No. 25 Cable Control raises and lowers the 'dozer and a front-mounted No. 44 double-valve Hydraulic Control tips and tilts the blade. The operator never needs to leave his seat to make a blade adjustment.

## GET FULL DETAILS

on the revolutionary new Gyrodozer from your Caterpillar Dealer.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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**WANTED—  
THE HARD WORK**



FIRST, spray Texaco Bridge Cement on upturned surfaces.

**Texaco Bridge Cement  
and pea gravel surface  
armors bridge ties, stringers,  
decking and piling  
against fusees, hot slivers,  
coals and severe weather  
almost indefinitely —**

## THE BRIDGE TIES LAST



SECOND, coat cemented surfaces with clean pea gravel.

### here's why:

Texaco Bridge Cement will not chip, peel or become brittle. It seals and stops cracks in ties, waterproofs surfaces. It provides an impenetrable armor for vulnerable bridge surfaces at pennies a tie. Lasts for years.

For full information on this easy, low-cost method of bridge protection, consult a Texaco representative. Call the nearest Texaco Railway Sales Office in New York, Chicago, San Francisco, St. Paul, St. Louis or Atlanta. Or write The Texas Company, *Railway Sales Division*, 135 East 42nd Street, New York 17, N. Y.

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